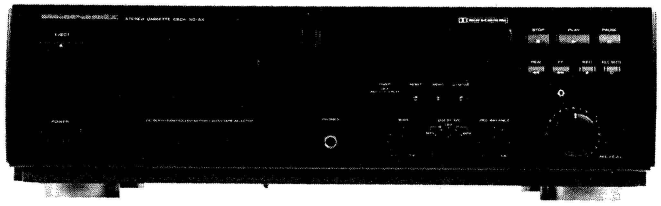
Service Manual

74 SD53 / 01B/02B/05B /01G/02G

Stereo cassette deck

For repair information of the cassette mechanism see Service Manual of "Recorders tape deck CMAY5Z332A"



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marantz®

model SD-53

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PCS 71 605

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
Austria

BELGIUM
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

CHILE
MARANTZ DIVISION OF
PHILIPS S.A.
Av.Santa Maria 0760
Casilla 2687
Santiago
Chile

DENMARK
MARANTZ
Horsvinget 5
2630 Tastrup
Denmark

FINLAND
MARANTZ
Kuortanegatan 1
00520
Helsingfors 52
Finland

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France

GERMANY
MARANTZ GERMANY GmbH
Kleine Heide 12
Postfach 4802
Halle-Westfalen
Germany

GREAT BRITAIN
MARANTZ HiFi UK Ltd.
Kingsbridge House
Padbury Oaks
575-583 Bath Road
Longford Middlesex UB7 OEH,
U.K.

GREECE
ADAMCO ELECTR. SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

ITALY
MARANTZ ITALIANA SPA
Piazza IV Novembre 3
20124 Milano
Italy

JAPAN
MARANTZ JAPAN INC.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
P.O.Box 8196
Salmiah
22052 Kuwait

NETHERLANDS
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

NORWAY
MARANTZ
Postboks 7034
Assiden
3007 Drammen
Norway

PORTUGAL
COREL
Av. da Liberdade
211-2 Esq.
1200 Lisboa
Portugal

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia

SOUTH AFRICA
MARANTZ S.A.
10 Bond Street
Randburg 2194
P.O. Box 7703
Johannesburg 2000
South Africa

SPAIN
MARANTZ SPAIN
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

SWEDEN
MARANTZ
Box 1324
17125 Solna
Sweden

SWITZERLAND
MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country.
In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

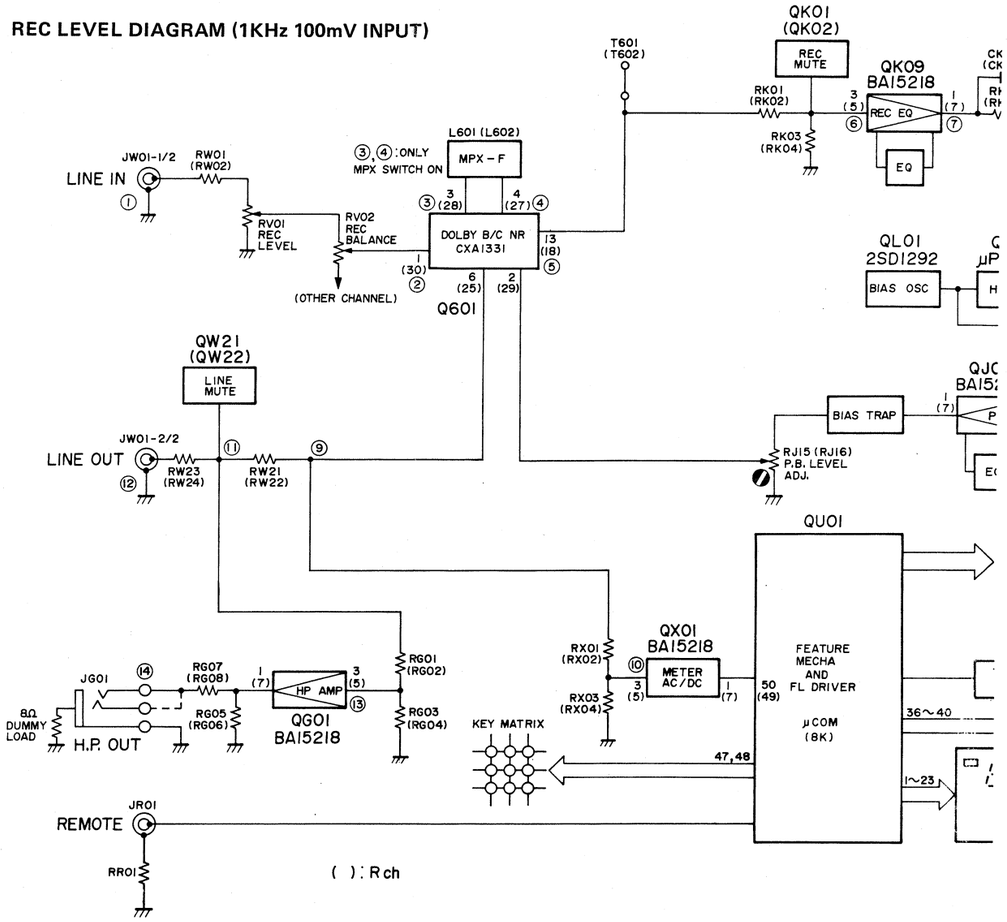
TECHNICAL SPECIFICATIONS (DIN)

Motor (s) and type	Two DC
Number of heads	Two
Frequency range (3 dB limits ~ no dolby)	
Type IV (metal) tape	20 Hz ~ 20 kHz
Type II (CrO_2) tape	20 Hz ~ 19 kHz
Type I (Fe / Normal) tape	20 Hz ~ 18 kHz
Signal noise ratio (CrO_2 tape at 1 kHz) (no Dolby NR / Dolby B and C NR)	57 / 65 / 74 dB
Wow and flutter	0.06 %
Output level / Impedance	500 mV / 3 k ohms
Headphone output	35 mV / 8 ohms
Power supply	
/ 02B version	230 V AC 50 / 60 Hz
/ 05B, / 07B version	240 V AC 50 / 60 Hz
/ 01B version (4 voltages)	110 ~ 240 V AC 50 / 60 Hz
Dimensions	
width	420 mm
Height	132 mm
Depth	300 mm
Net weight	4.6 kg

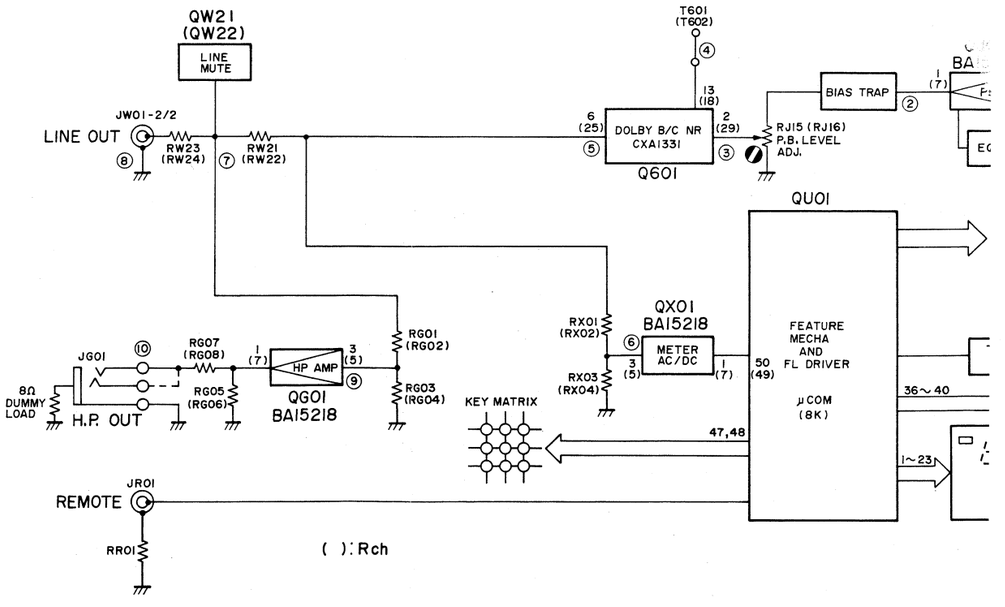
Specifications subject to change without prior notice.

1. BLOCK DIAGRAM

REC LEVEL DIAGRAM (1KHz 100mV INPUT)



P. B. LEVEL DIAGRAM (1KHz -1dB PLAYBACK)



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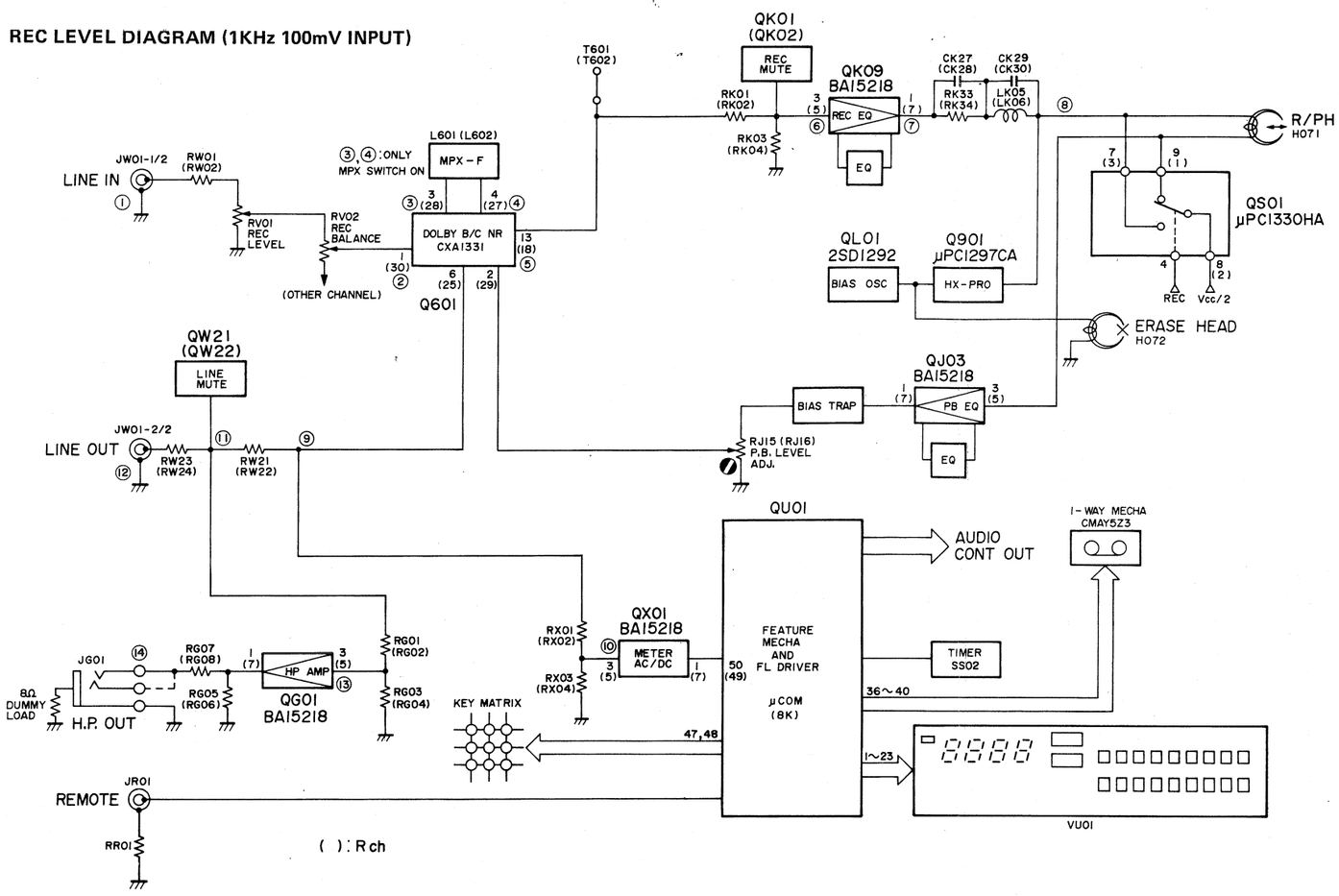
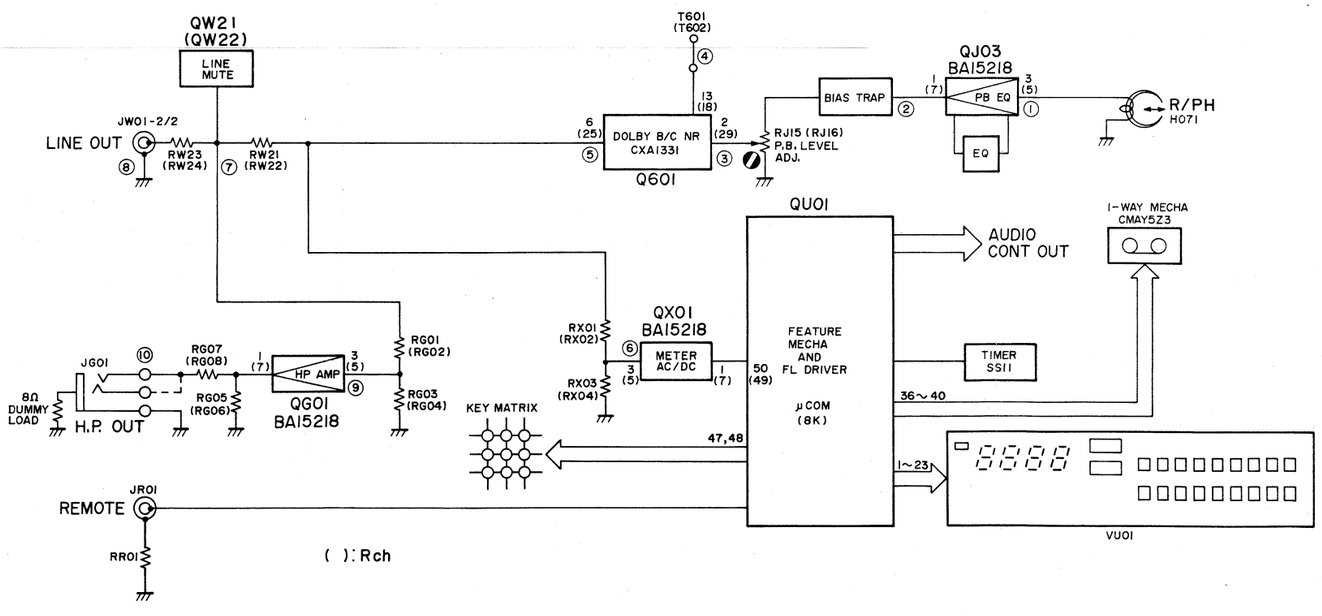
REC LEVEL DIAGRAM (1KHz 100mV INPUT)



P. B. LEVEL DIAGRAM (1KHz -1dB PLAYBACK)



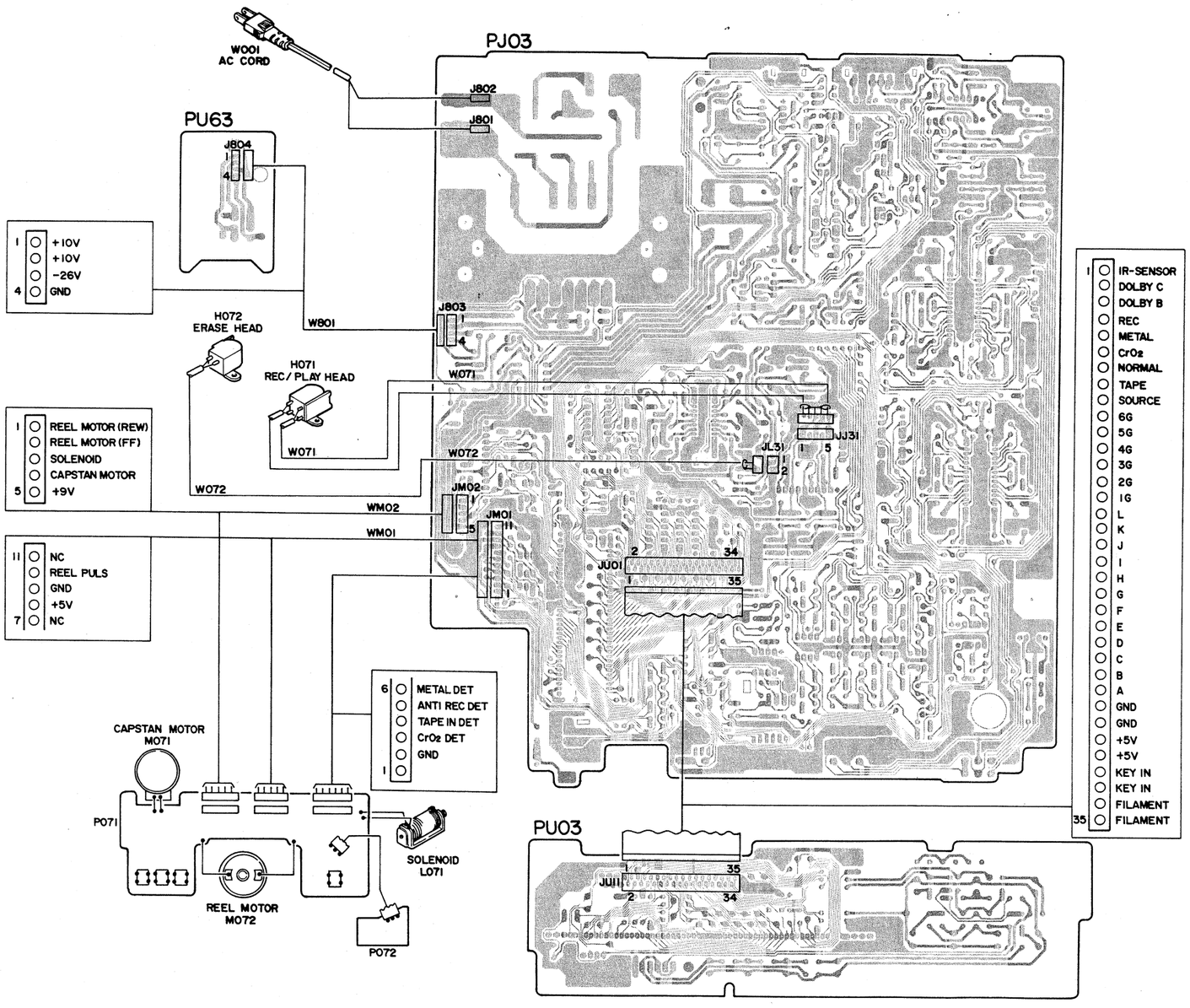
REC LEVEL

MEASURMENT POINT NO.	UNIT	
	mV	dBV
①	100.0	-20.0
②	38.5	-28.3
③	69.2	-23.2
④	43.7	-27.2
⑤	388.0	-8.2
⑥	96.6	-20.3
⑦	518.8	-5.7
⑧	34.7	-29.2
⑨	555.9	-5.1
⑩	229.1	-12.8
⑪	467.7	-6.6
⑫	457.0	-6.8
⑬	358.9	-8.9
⑭	29.9	-30.5

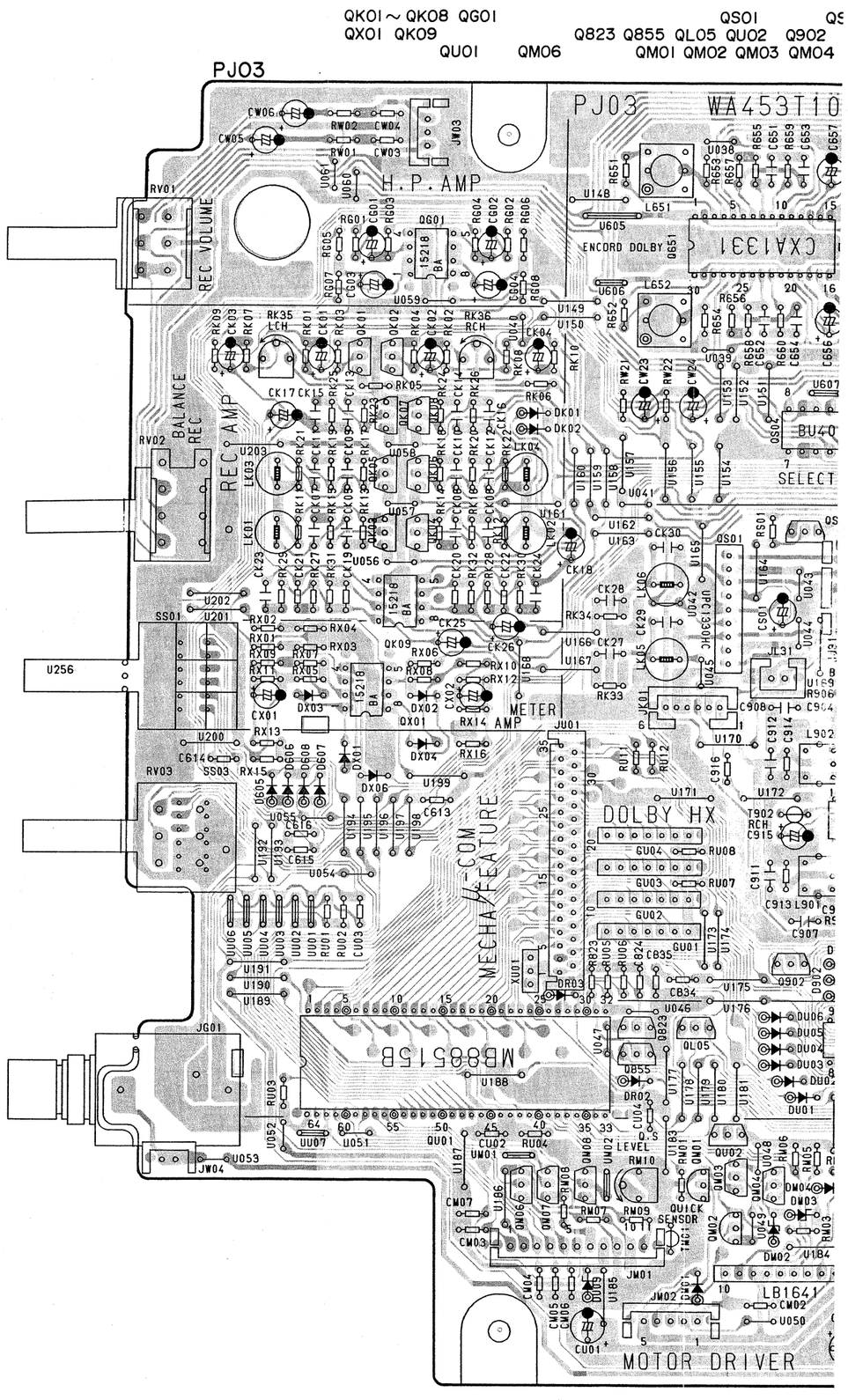
P.B LEVEL

MEASURMENT POINT NO.	UNIT	
	mV	dBV
①	0.2	-74.0
②	55.0	-25.2
③	21.9	-33.2
④	388.0	-8.2
⑤	555.9	-5.1
⑥	229.1	-12.8
⑦	467.7	-6.6
⑧	457.0	-6.8
⑨	358.9	-8.9
⑩	29.9	-30.5

2. CONNECTION DIAGRAM



3. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern side)



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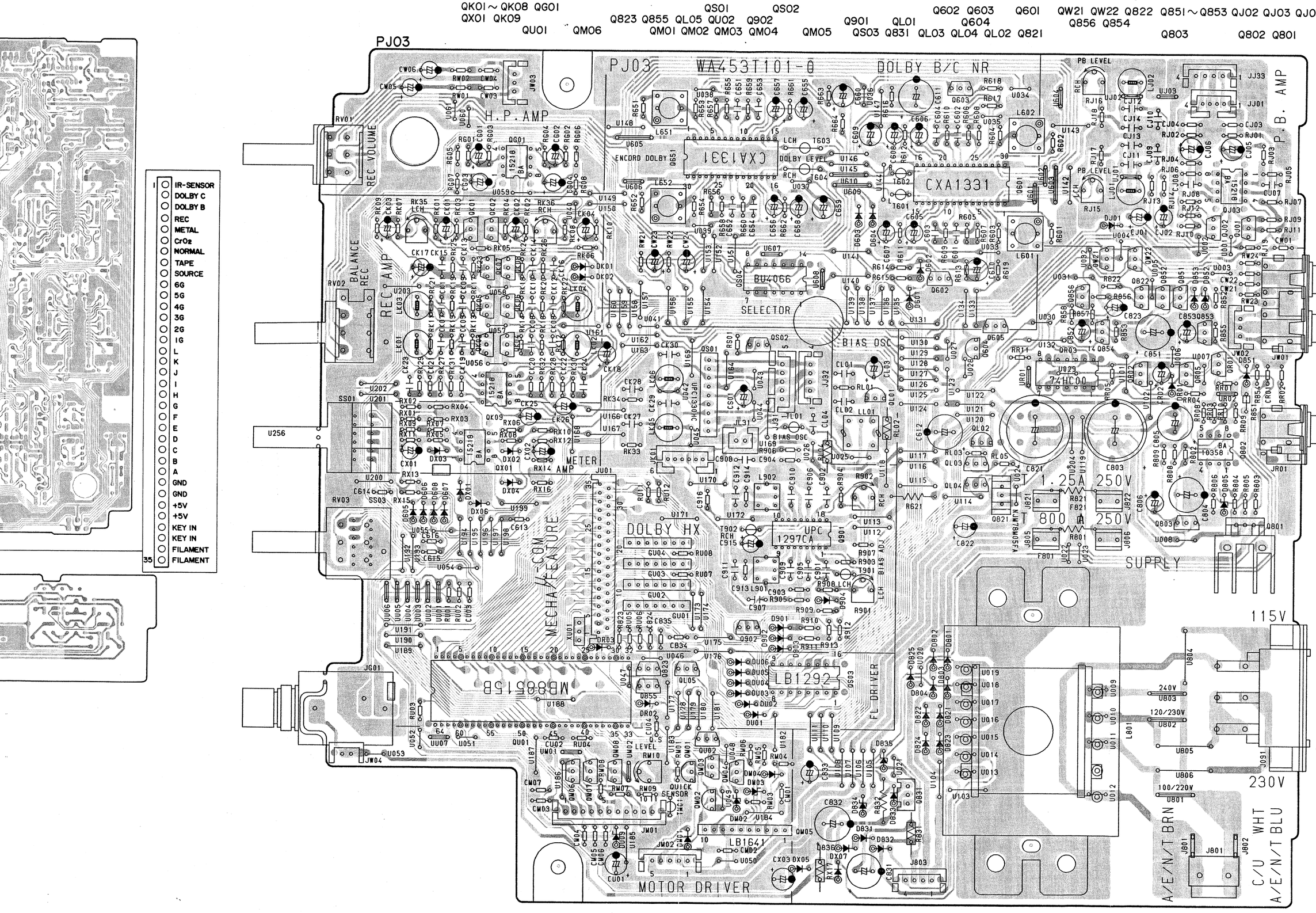

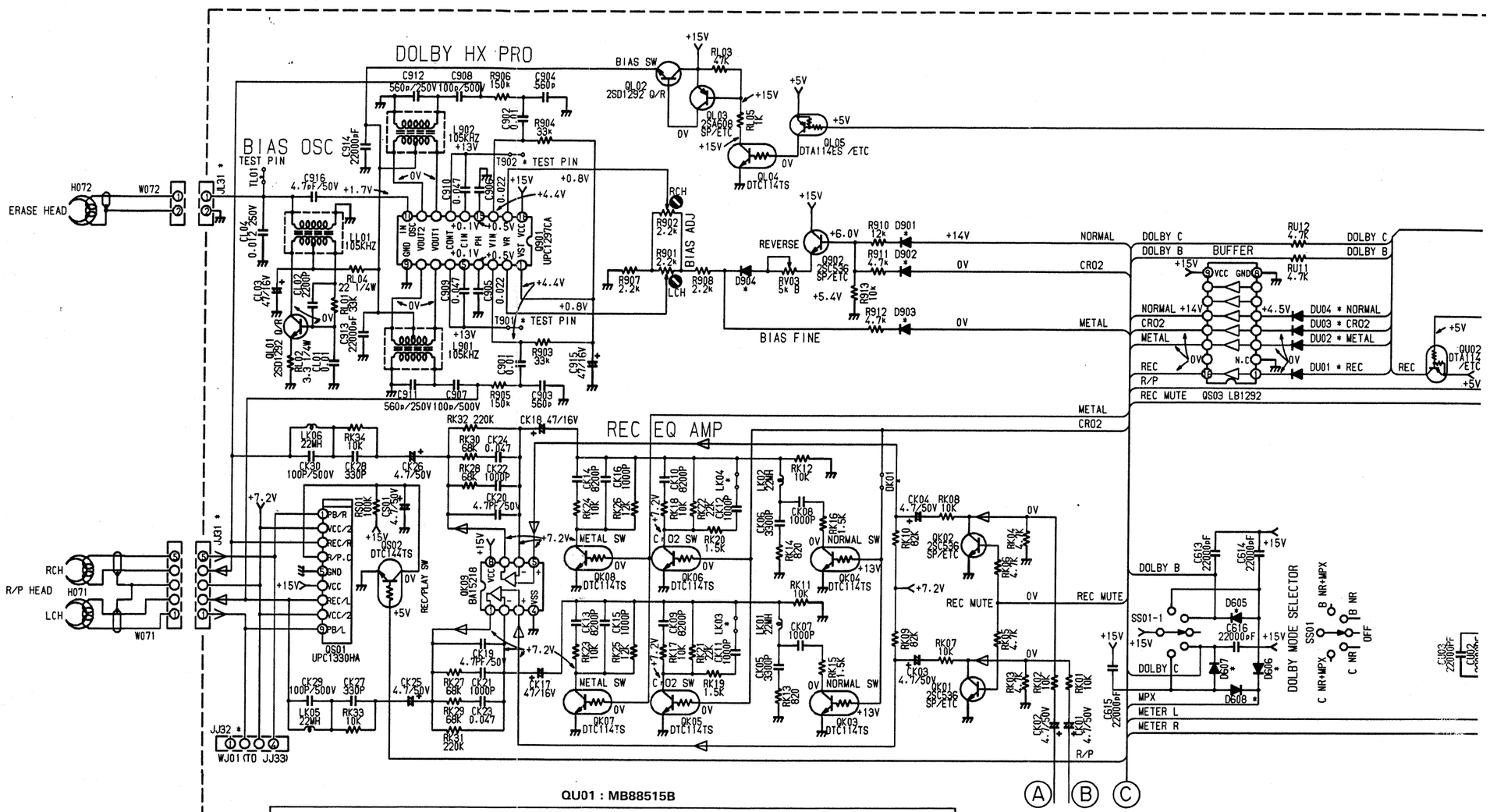

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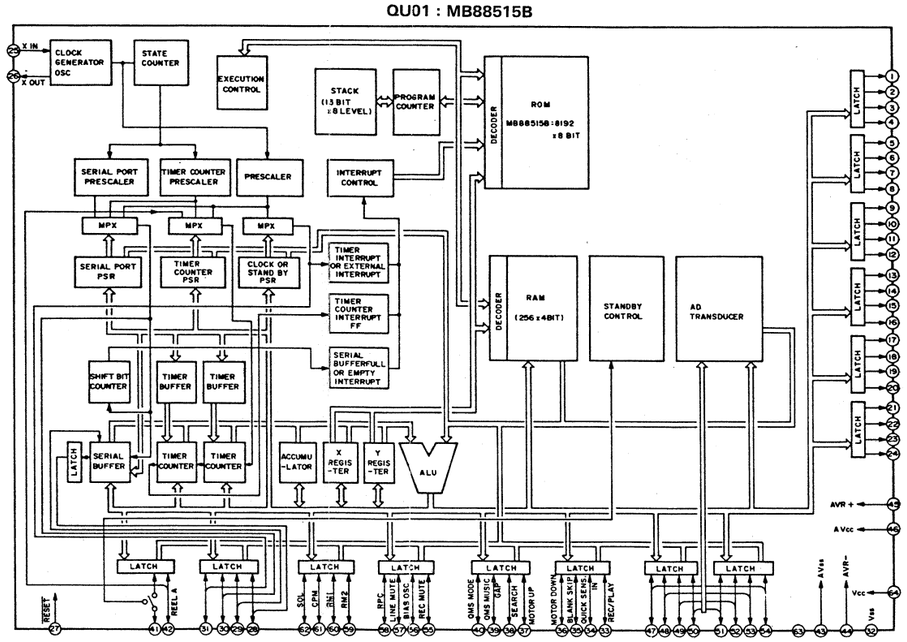


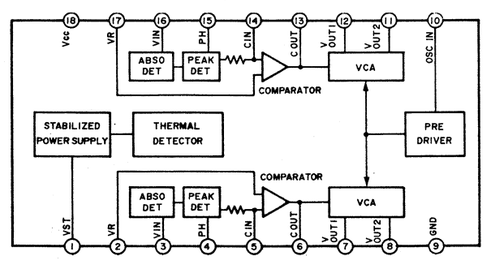
[NOTE]

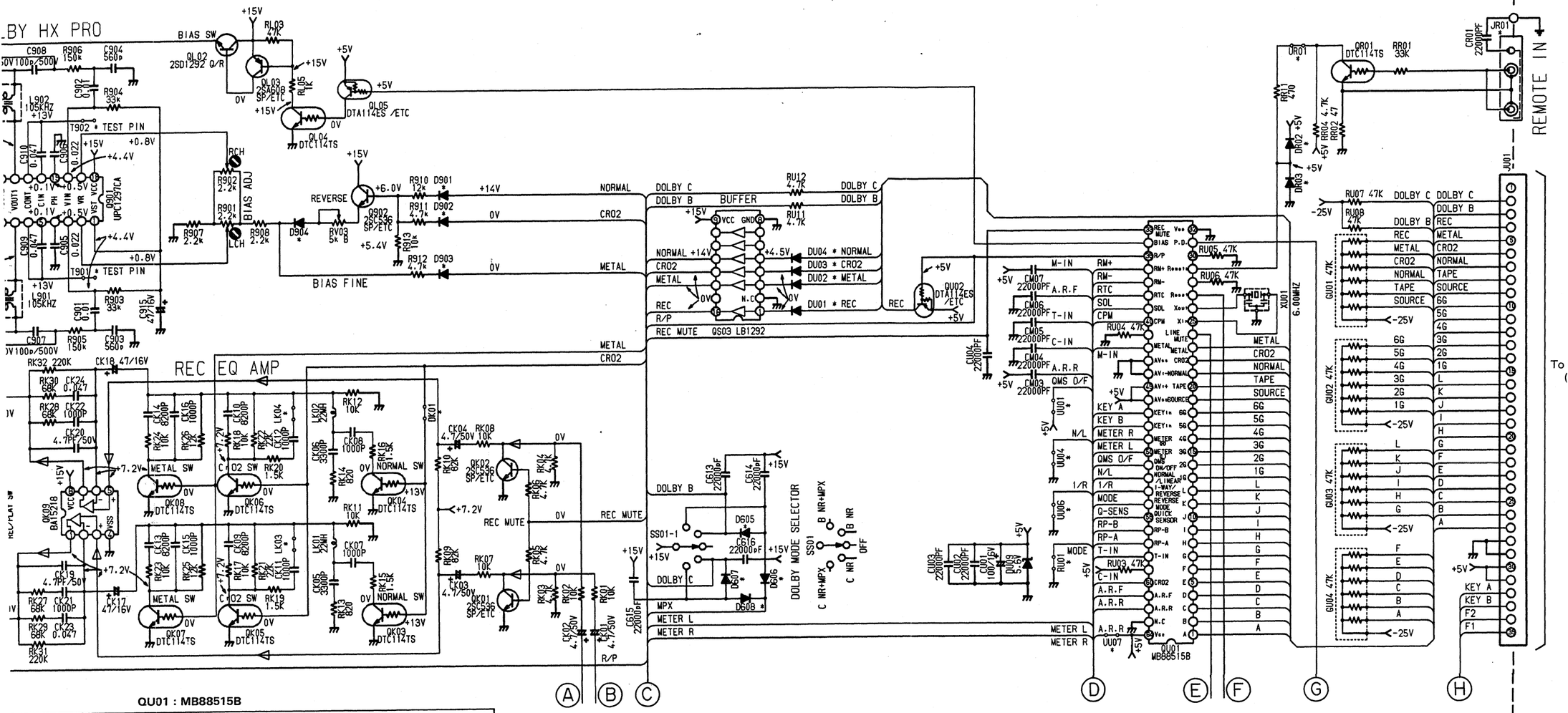
: REC SIGNAL LINE

: PLAY SIGNAL LINE

+7.2V (Vcc / 2) : SIGNAL GND

Q901 : µPC1297CA





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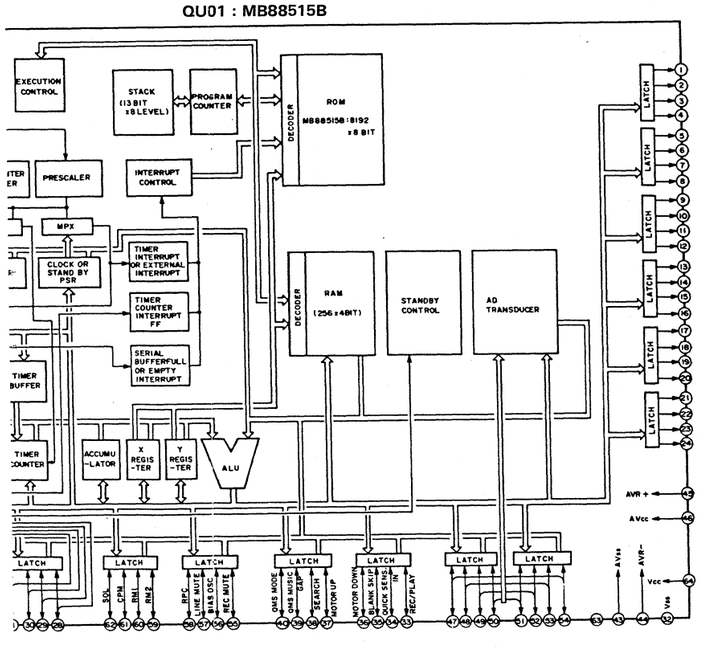


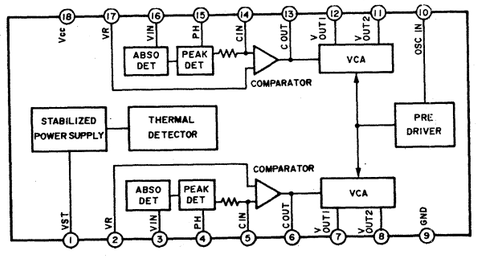
[NOTE]

: REC SIGNAL LINE

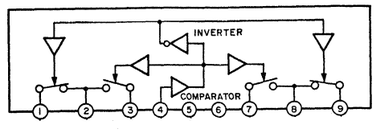
: PLAY SIGNAL LINE

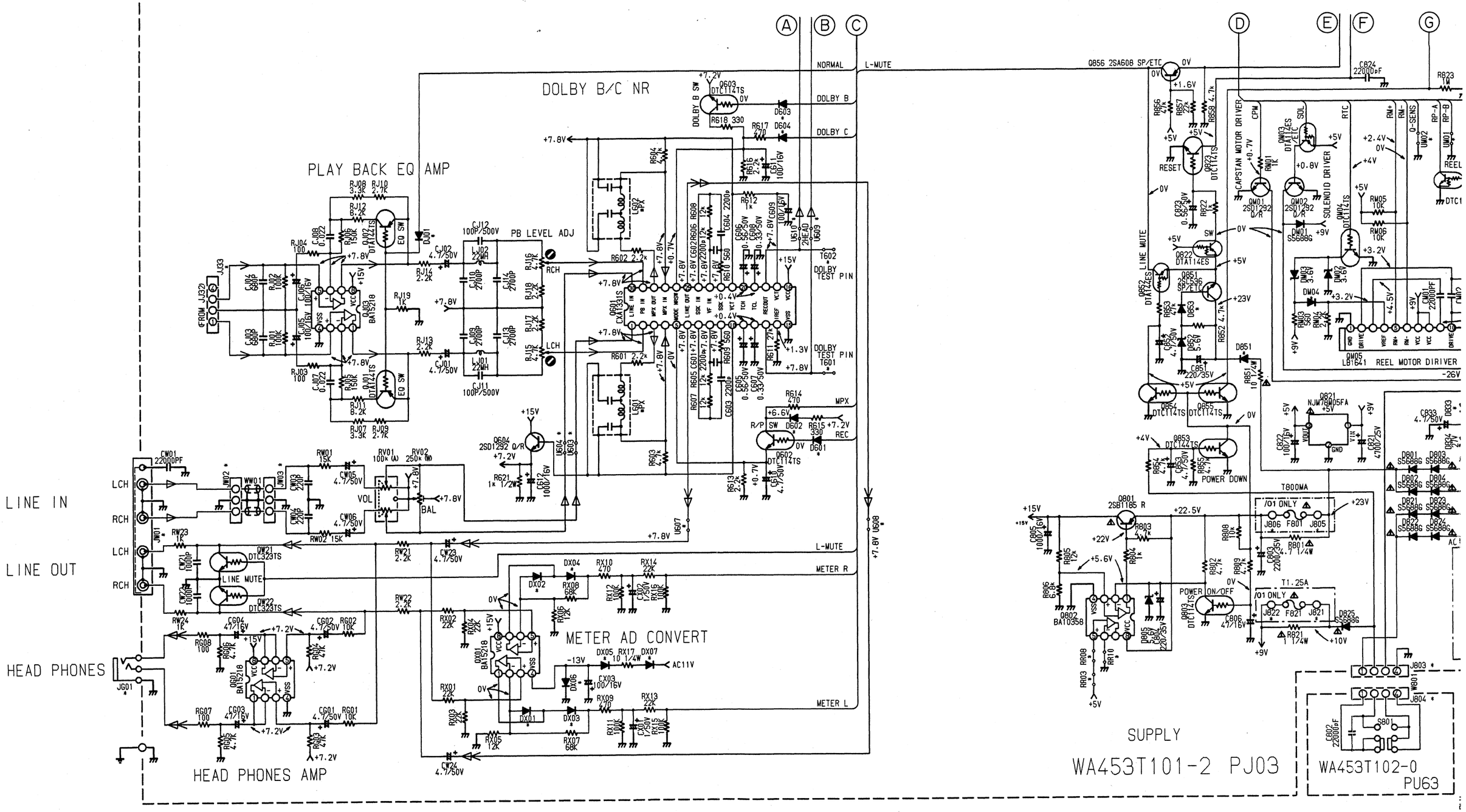
+7.2V (Vcc / 2) : SIGNAL GND

Q901 : µPC1297CA



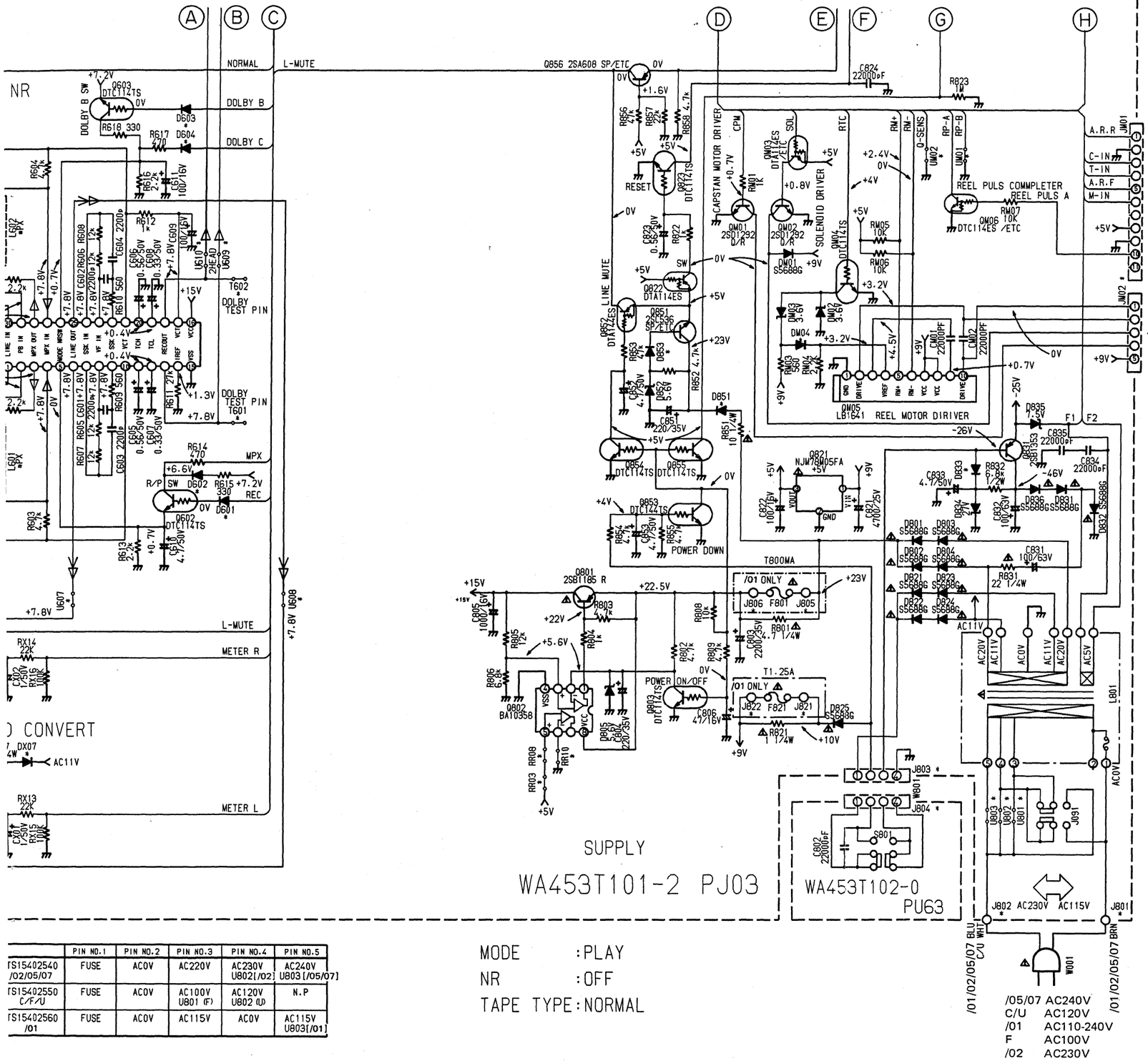
QS01 : µPC1330HA





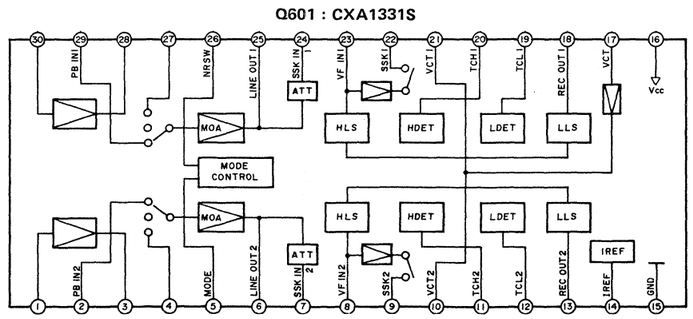
	PIN NO.1	PIN NO.2	PIN NO.3	PIN NO.4	PIN NO.5
TS15402540 /02/05/07	FUSE	ACOV	AC220V	AC230V U802[/02]	AC240V U803[/05/07]
TS15402550 C/F/U	FUSE	ACOV	AC100V U801 (F)	AC120V U802 (U)	N.P
TS15402560 /01	FUSE	ACOV	AC115V	ACOV	AC115V U803[/01]

MODE :PLAY
NR :OFF
TAPE TYPE:NORMAL

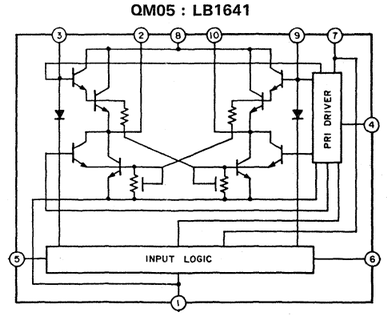


	PIN NO.1	PIN NO.2	PIN NO.3	PIN NO.4	PIN NO.5
TS15402540 /02/05/07	FUSE	ACOV	AC220V	AC230V U802[/02]	AC240V U803[/05/07]
TS15402550 C/F/U	FUSE	ACOV	AC100V U801 (F)	AC120V U802 (U)	N.P
TS15402560 /01	FUSE	ACOV	AC115V	ACOV	AC115V U803[/01]

Q601 : CXA1331S

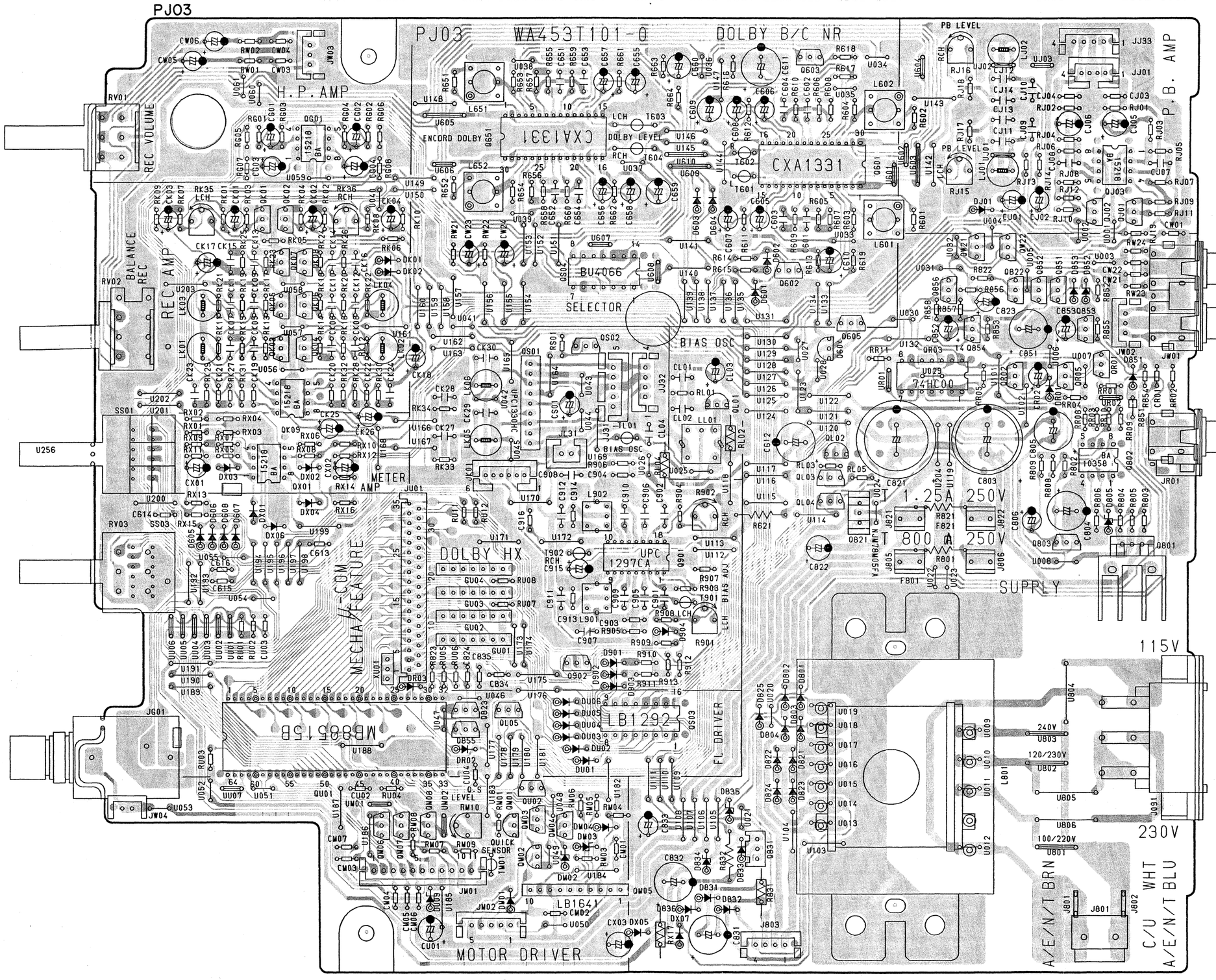


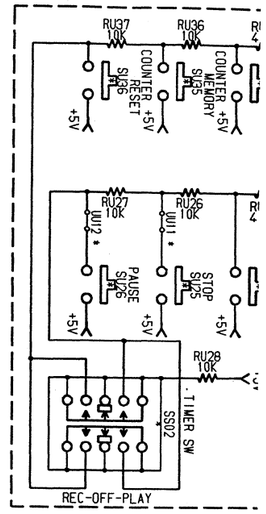
QM05 : LB1641

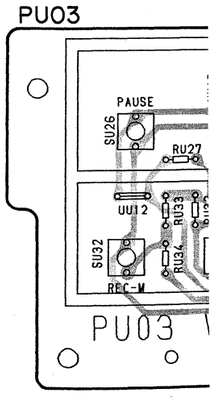


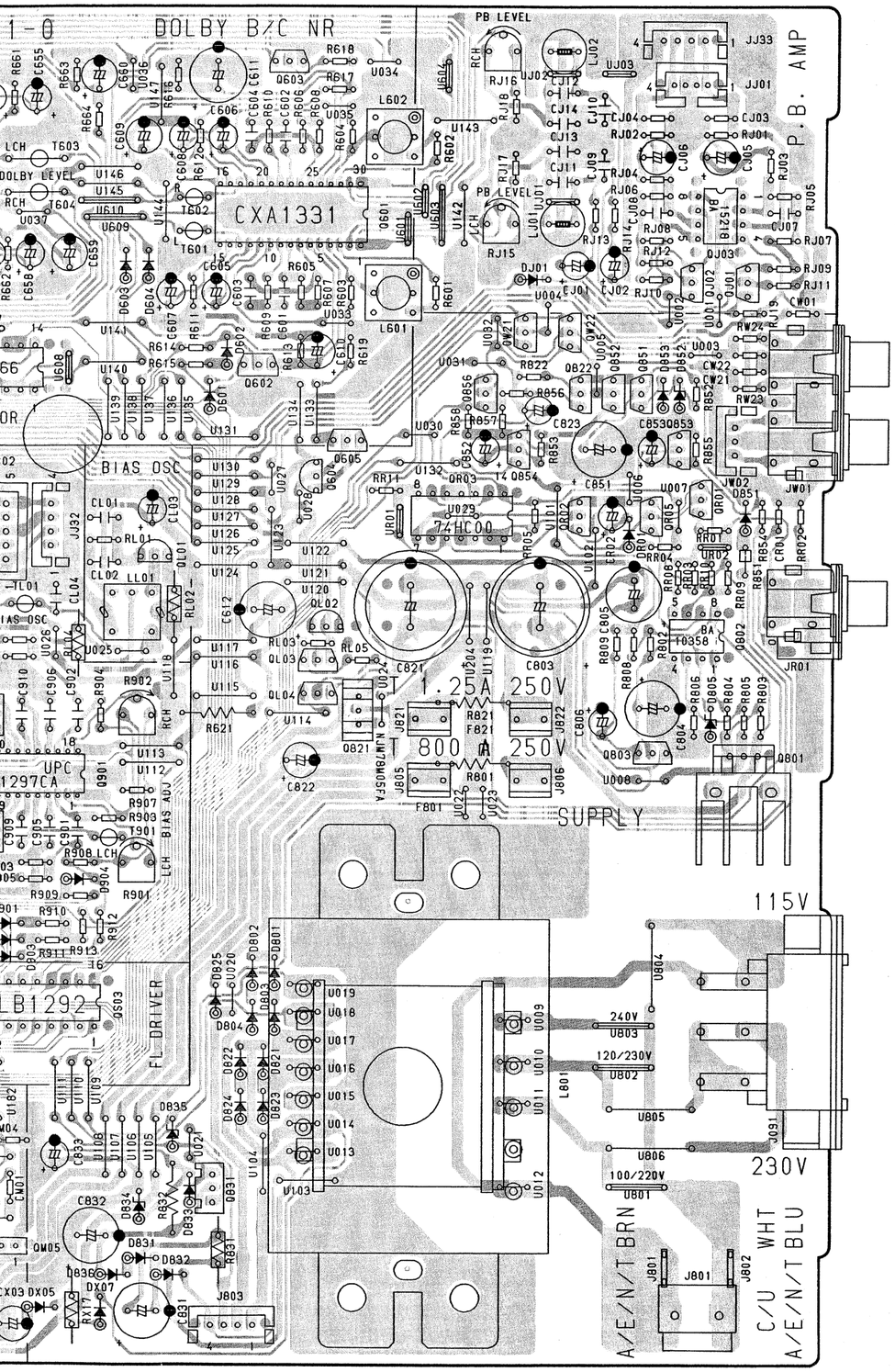
QK01～QK08 QG01 QS01 QS02 Q602 Q603 Q601 QW21 QW22 Q822 Q851～Q853 QJ02 QJ03 QJ01
QX01 QK09 Q823..Q855 QL05 QU02 Q902 Q901 QL01 Q604 Q856 Q854
QU01 QM06 QM01 QM02 QM03 QM04 QM05 QS03 Q831 QL03 QL04 QL02 Q821 Q803 Q802 Q801

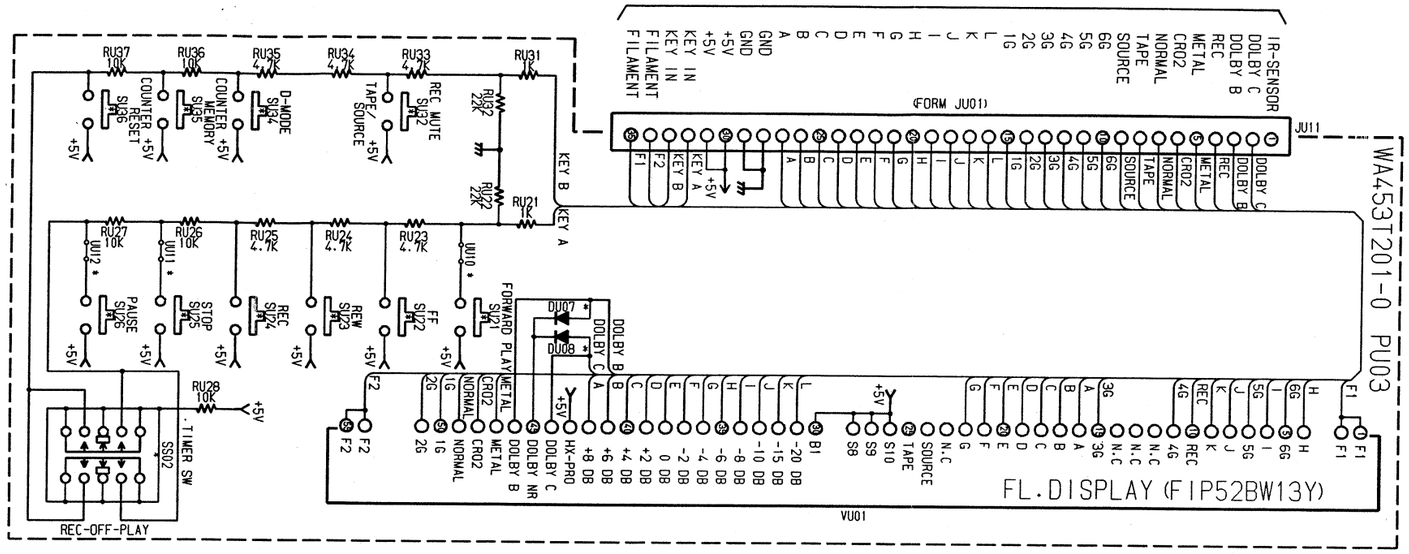
PJ03

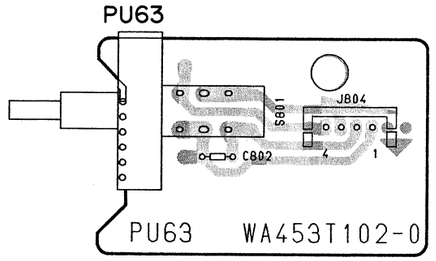


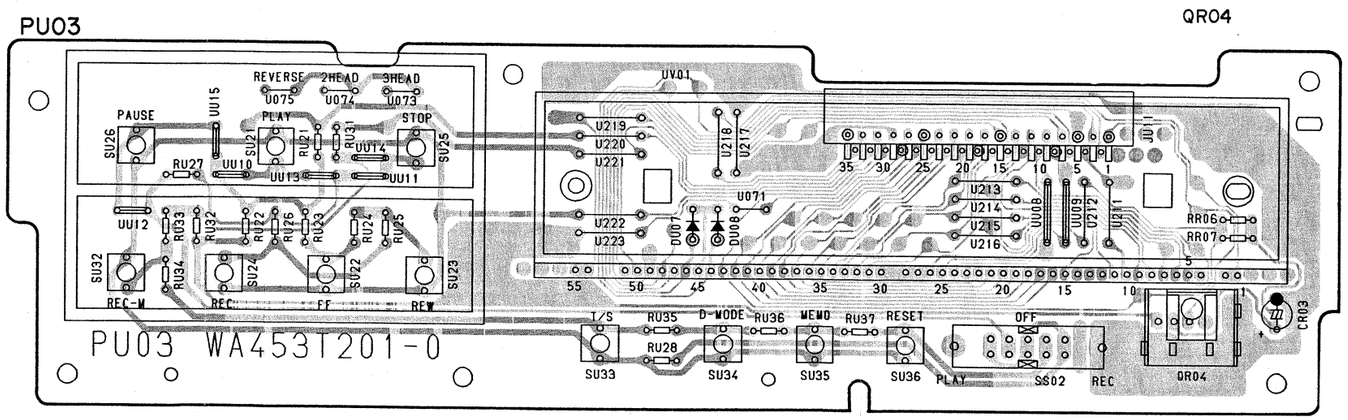




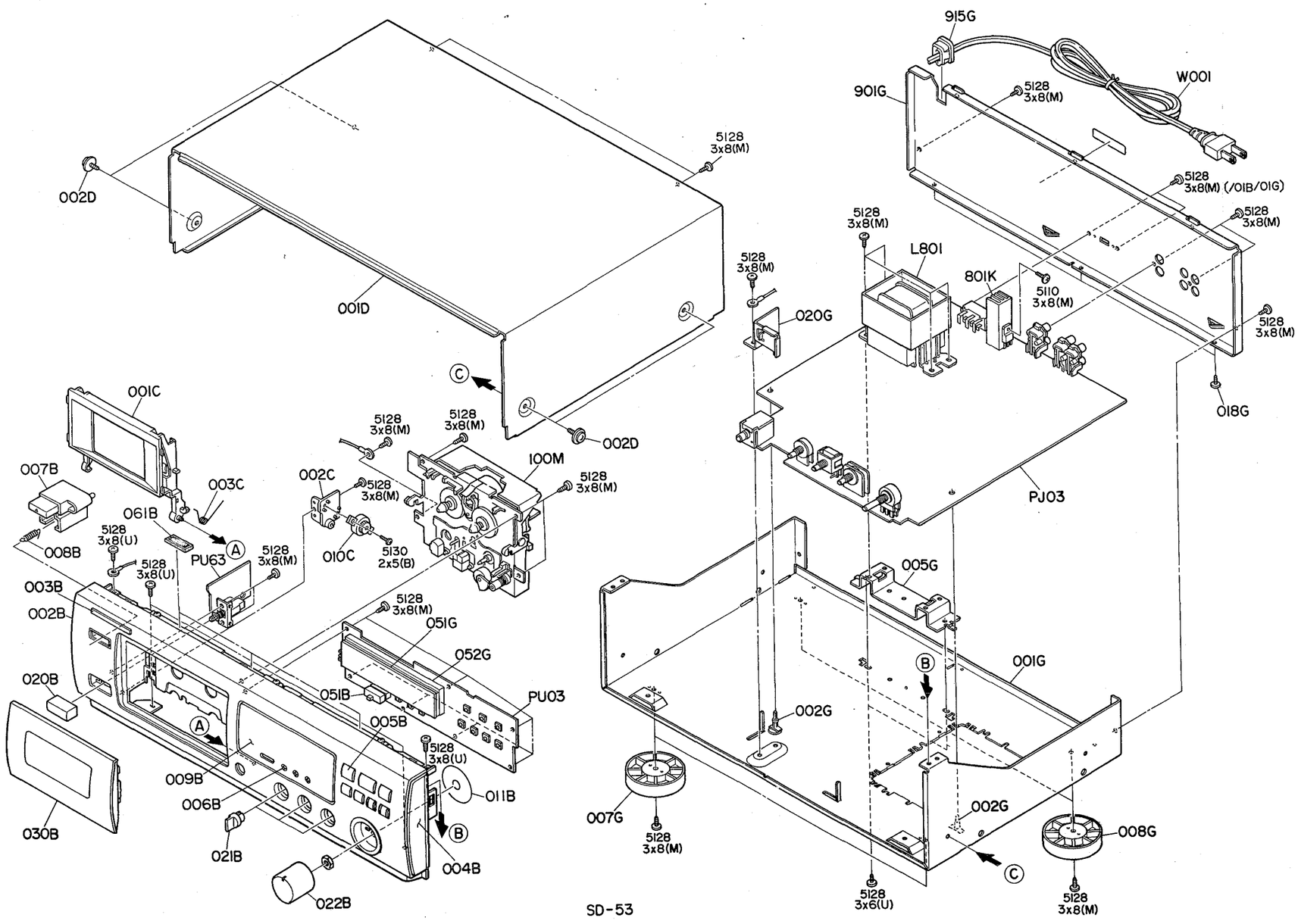

Q602 Q603 Q601 QW21 QW22 Q822 Q851~Q853 QJ02 QJ03 QJ01
Q901 QL01 Q604 Q856 Q854
QM05 QS03 Q831 QL03 QL04 QL02 Q821 Q803 Q802 Q801
DOLBY B/C NR
PB LEVEL
P.B. AMP
CXA1331
BIAS OSC
74HC00
1.25A 250V
T 800 mA 250V
SUPPLY
UPC 1297CA
LB1292
FL DRIVER
115V
240V
120/230V
100/220V
230V
A/E/N/T BRN
C/U WHT
A/E/N/T BLU


IR-SENSOR
DOLBY C
DOLBY B
REC
METAL
CRO2
NORMAL
TAPE
SOURCE
FILAMENT
KEY IN
KEY IN
GND
+5V
+5V
(FORM JU01)
JU11
WA453T201-0 PU03
KEY B
KEY A
COUNTER RESET
COUNTER MEMORY
D-MODE
REC MUTE
TAPE/SOURCE
PAUSE
STOP
REC
REW
FF
FORWARD PLAY
TIMER SW
REC-OFF-PLAY
FL.DISPLAY (FIP52BW13Y)
VU01


PU63
JB04
C802
PU63 WA453T102-0

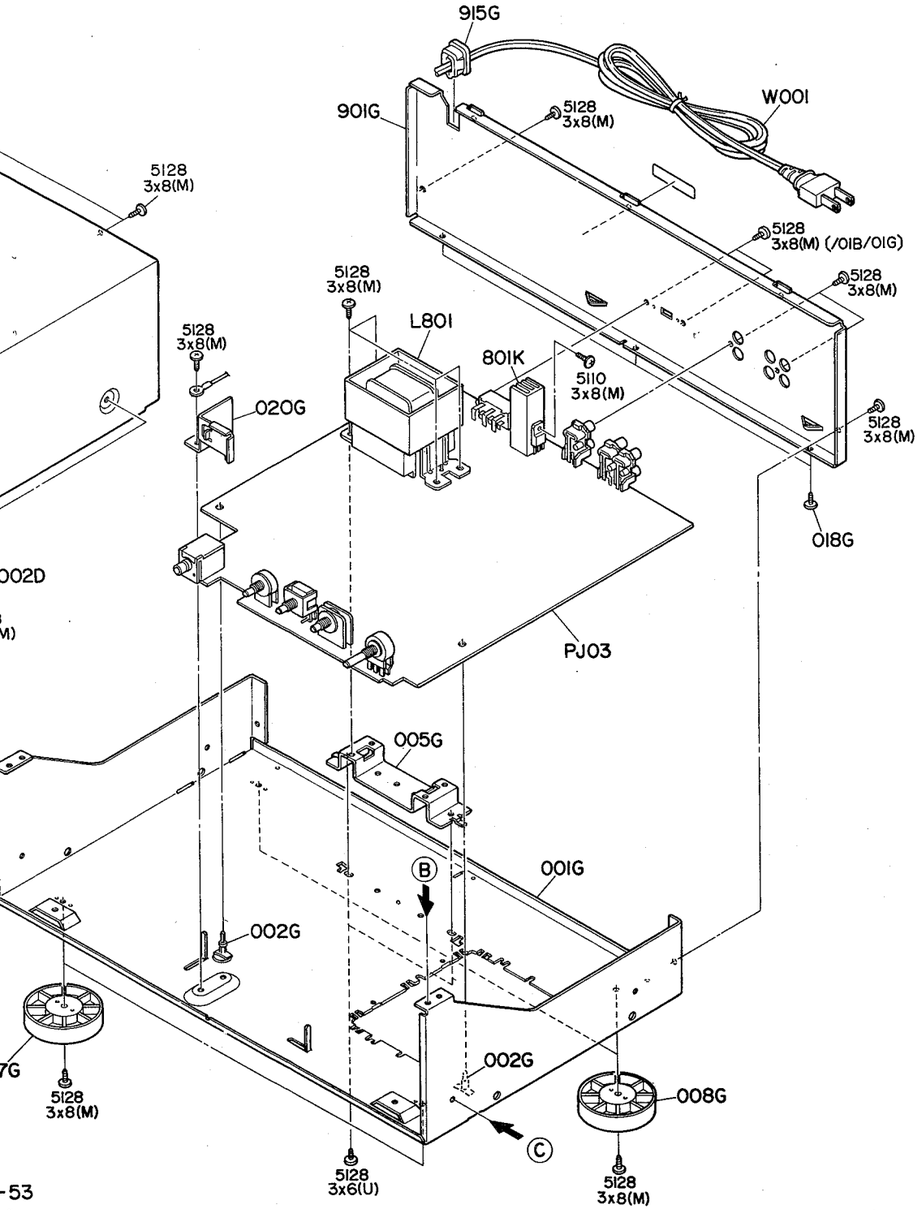

PU03
QR04
REVERSE
2HEAD
3HEAD
PAUSE
PLAY
STOP
REC-W
REC
FF
REW
I/S
D-MODE
MEMO
RESET
OFF
PLAY
REC
PU03 WA453T201-0

4. EXPLODED VIEW AND PARTS LIST



SD-53

POS.N
002E
004E
005E
006E
007E
008E
020E
021E
022E
030E
051E
001(
002(
003(
010(
007(
008(
05(
05(
91(
001'
▲ J01'
W01

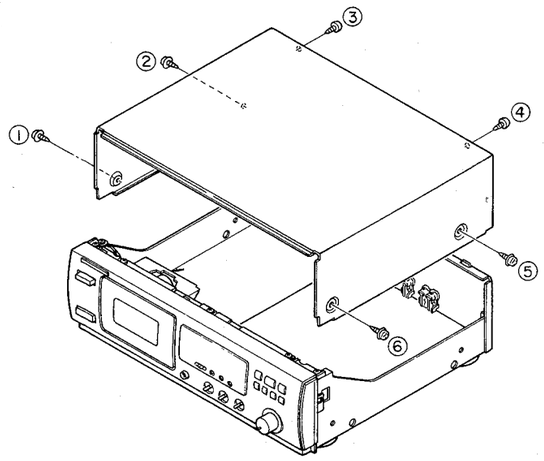


POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
002B	/01B/02B /05B	4822 443 41326	Front Panel (BLK)	453T248020
	/01G/02G	4822 443 41327	Front Panel (GLD)	453T248120
004B	/01B/02B /05B	4822 464 51008	Chassis, Front (BLK)	453T105010
	/01G/02G	4822 464 51009	Chassis, Front (GLD)	453T105110
005B	/01B/02B /05B	4822 410 62942	Button, Mecha (BLK)	453T270010
	/01G/02G	4822 410 62948	Button, Mecha (GLD)	453T270110
006B		4822 410 62979	Button, Counter / Mode	453T270220
007B	/01B/02B /05B	4822 410 62944	Button, Eject (BLK)	453T270030
	/01G/02G	4822 410 62949	Button, Eject (GLD)	453T270130
008B		4822 492 42689	Spring, Eject	453T115010
020B	/01B/02B /05B	4822 410 62744	Button, Power (BLK)	285K270010
	/01G/02G	4822 410 62745	Button, Power (GLD)	285K270110
021B	/01B/02B /05B	4822 413 31573	Knob, Bias / Dolby / Rec / Balance (BLK)	415T154020
	/01G/02G	4822 413 31782	Knob, Bias / Dolby / Rec / Balance (GLD)	415T154220
022B	/01B/02B /05B	4822 413 31572	Knob, Rec Level (BLK)	415T154010
	/01G/02G	4822 413 41641	Knob, Rec Level (GLD)	415T154110
030B	/01B/02B /05B	4822 443 64054	Cassette Cover Assembly (BLK)	453T053600
	/01G/02G	4822 443 64055	Cassette Cover Assembly (GLD)	453T053610
051B		4822 413 41827	Knob, Timer	453T154010
001C		4822 691 20881	Holder, Cassette	453T271010
002C		4822 403 71022	Bracket Cassette	415T160050
003C		4822 492 33428	Spring, Cassette	453T115020
010C		4822 466 92367	Dumper, Gear	415T130010
007G		4822 462 42045	Leg, Front	183J057010
008G		4822 462 42048	Leg, Rear	183J057110
051G		4822 256 92126	Holder, FL	453T271020
052G		4822 459 10942	Sticker, FL	056J122020
915G	/02B/05B /02G	4822 532 60948	Bushing, AC Cord	450H259010
	/01B/02G	4822 532 61184	Bushing, AC Cord	085J259010
001T		4822 736 21905	User Manual	454T851310
⚠J011	/01B/01G	4822 265 10092	Jack, AC Adapter	YJ04001240
W011		4822 321 21438	Cord, RCA Stereo	ZD01000330

5. DISASSEMBLY

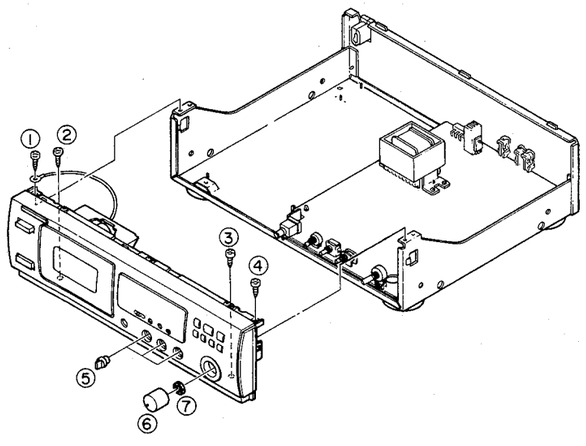
5.1 REMOVING THE TOP COVER

Remove the screws ① ~ ⑥ .



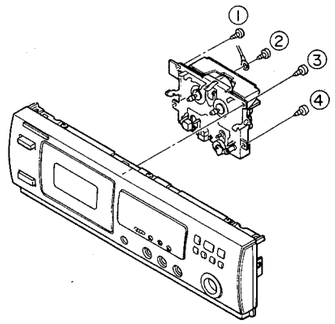
5.2 REMOVING THE FRONT PANEL

1) Remove the screws ① ~ ④ .
2) Remove the Knob ⑤, ⑥ and Nut ⑦ .



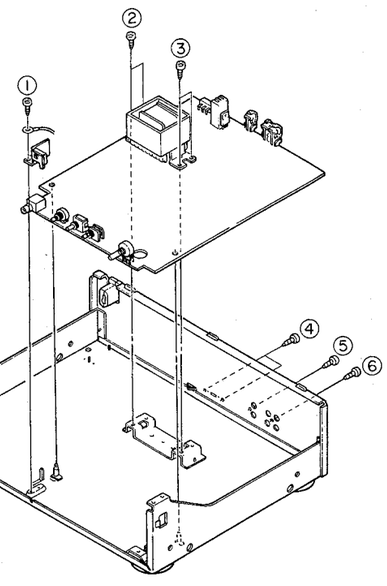
5.3 REMOVING THE MECHANISM

Remove the screws ① ~ ④ .



5.4 REMOVING THE MAIN P.W. BOARD

Remove the screws ① ~ ⑥ .



6. TEST EQUIPMENT REQUIRED FOR SERVICING

For measuring or checking your Cassette Deck, the following instruments and materials are necessary.

- Audio Oscillator (AF OSC)
- Attenuator (600 Ω)
- VTVM
- Distortion Meter
- Oscilloscope
- Wow and Flutter Meter
- Torque Meter (Cassette Type)
- Digital Frequency Counter
- Blank Tapes (Completely erased with bulk eraser)
  AC-224 (Normal)
  AC-513 (CrO_2)
  AC-712 (Metal)

NOTE:
If any doubt is noted in a measured value, use new tape.

- Test Tape

TCC-112•MTT-111	Wow and Flutter, Tape Speed
TCC-140•MTT-112B	Signal-to-Noise Ratio
TCC-130•MTT-150	Level Adjustment
TCC-161•MTT-256	Frequency Response (for Normal)
TCC-261•MTT-356	Frequency Response (for CrO_2 and Metal)
TCC-192•MTT-121	Cross Talk
TCC-194•MTT-141	Channel Separation
TCC-174A•MTT-255M (A-BEX)•(TEAC)	Azimuth adjustment

- Mirror cassette 12 µm padless
  TCC-902•MTT-902 Tape travel check
- Head and guide gauge (M-300)
  THG-801

7. ELECTRICAL ADJUSTMENTS

(A) Remark for adjustment

1) Test tapes damp easily. Erase magnetism of heads and capstans, etc. completely with head erasers before using them.
2) Keep away from measuring instruments have transformer inside and tape eraser.
3) The method of magnetism erase: turn the head eraser on a little away from the sets. Then, close heads and capstans and move up and down 4 – 5 times. Turn them off after making distance slowly.
4) Tools you are going to use should not be magnetized. Erase magnetic them by bulkeraser sometimes.
5) Adjust semi-fixed resistor for adjustment and variable coil, etc. spin and the number of times as less as possible.
6) Adjust and check SPEED and WOW, etc. by normal sets condition.
7) A little bond lock and pay attention to sticking around and flowing.
8) Check AC voltage input and audio signal generator output voltage 2 – 3 times per day to operate as normal.

(B) S.R.L/Standard Recording Level

1. S.R.L (Standard Recording Level) which is 160 nWb/m on a tape by* OPEN CIRCUIT MAGNETIC FLUX. The relationship among recording level, meter scale and test tape are as follows:

• OPEN CIRCUIT MAGNETIC FLUX (nWb/m)	160	185	200	220	250	
• OUR STANDARD METER SCALE	–4	–3	–2	–1	0	dB
• CLOSED CIRCUIT MAGNETIC FLUX (nWb/m)	**	160	185	200 ***	****	

(*): OPEN CIRCUIT MAGNETIC FLUX = CLOSED CIRCUIT MAGNETIC FLUX + LEAK MAGNETIC FLUX.
(**): S.R.L
(***): TCC-130 (DOLBY REFERENCE LEVEL) (MTT-150)
(****): TCC-120 (IEC REFERENCE LEVEL) (MTT-212)

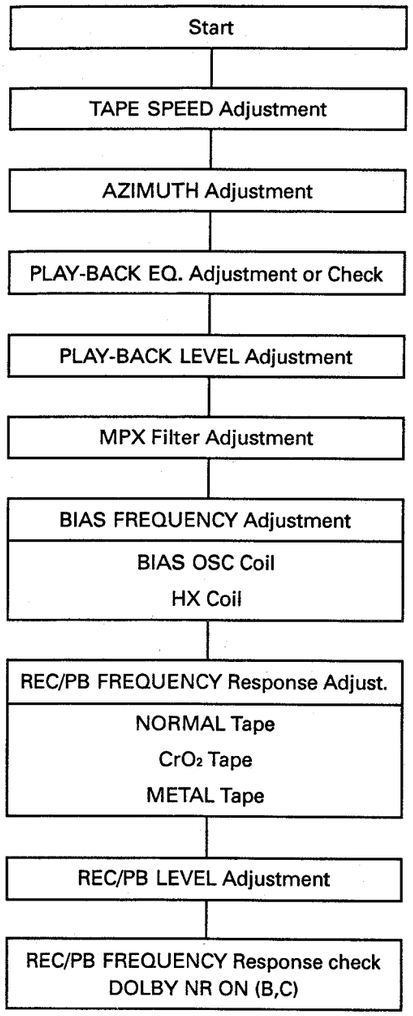
2. S.R.L Setting As for sets, DOLBY LEVEL is usually standard, it will be as follows:
1) Recording condition is to add 1 kHz, 100 mV signals on LINE INPUT.
2) Adjust REC VOLUME and should be –6 dBm (388 mV) at DOLBY test point.

2-HEAD	Lch	T601	Rch	T602
3-HEAD	Lch	T603	Rch	T604

When connecting a measuring instrument (VTVM, etc.), insert a coupling capacitor of about 10 µF in the connection.
3) From this condition, input level is –3 db (3 dB down by attenuator). It is the standard recording condition at STANDARD RECORDING LEVEL. (S.R.L)

(Note) Depending on measurement items, playing standard level changes a lot. Recording level of specified test tape decides the standard level.

ADJUSTMENT FLOW CHART



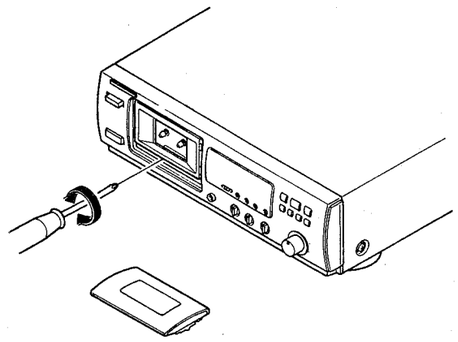
7.1 TAPE SPEED ADJUSTMENT

1) Play the middle of the tape and adjust semi-fixed resistor in motor and to be 3000 Hz (2990 – 3010 Hz).
2) After the set-up, play it again and check within range.

Remarks:
1) Carry them out the set condition.
2) Do not test the mechanism when the condition has a big difference of normal temperature.

7.2 HEAD AZIMUTH ADJUSTMENT AND PLAY-BACK FREQUENCY RESPONSE ADJUSTMENT (OR CHECK)

1) Play the frequency response tape and screw the AZIMUTH adjust screw at 12.5 kHz signal. Then, set output maximum to the screwed-up direction.
2) In case L/R peak point is difference, turn the lower channel maximum, keep the L/R balance.
3) Bondlock adjust screw.
4) Next, 315 Hz signal should be 0 dB and read 12.5 kHz signal level. In case the set is non-adjustment type, check the value whether it is normal.



7.3 PLAY-BACK LEVEL ADJUSTMENT

1) Play the DOLBY test tape, adjust semi-fixed resistor for adjustment L/R601, R/R602 at test point L/T601 and R/T602. Then, set voltage to –6 dBm (388 mV).
2) After adjustment, replay and check it again.

Remarks:
1) In case of drifting replay output, check the tape running and the test tape because it might be defective.

7.4 MPX FILTER ADJUSTMENT

1) Should be recording monitor by DOLBY LEVEL. Input signal level is 0 dB at 1 kHz.
2) Input signal frequency is 19 kHz (within ±10 Hz). Adjust MPX-F switch (model by) should be "ON" and the level is minimum.

2-HEAD	Lch	L601	Rch	L602
3-HEAD	Lch	L651	Rch	L652

Remarks:
1) It is under –40 dB as usual.

7.5 RECORDING BIAS FREQUENCY AND HX COIL ADJUSTMENT

1) Operate to REC mode at METAL position.
2) High impedance through test point TL01 and connect to measurement. (FREQUENCY COUNTER and OSCILLOSCOPE through AUDIO VOLT METER)
3) Adjust a bias-oscillated coil LL01 to be 105 kHz bias-oscillated frequency.
4) Turn bias current adjustment semi-fixed resistor R901/R902 fully to maximize the current.
5) Then, adjust HX coil L901 (L)/L902 (R) to maximize the DC voltage at T901 (L)/T902 (R).

7.6 REC/PLAY-BACK FREQUENCY RESPONSE ADJUSTMENT

1) Decrease –22 dB INPUT LEVEL from S.R.L setting. Record 1 kHz and 12.5 kHz signals at DOLBY-C position. (NORMAL tape/position)
2) Adjust semi-fixed resistor L/R901, R/R902 that the level of differences 1 kHz and 12.5 kHz should be 0 ~ +1.0 dB.
3) Only check CrO_2 and METAL tapes/positions.

7.7 REC/PLAY-BACK LEVEL ADJUSTMENT

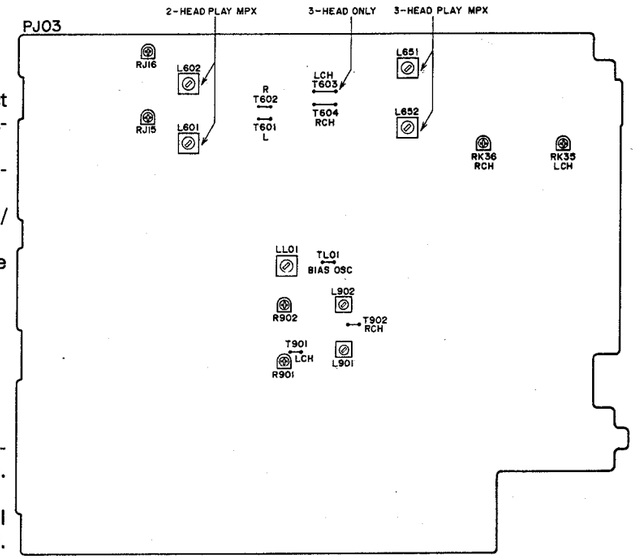
1) By NORMAL tape/position, set S.R.L setting and set monitor level scale 0 dB.
2) Do REWIND and PLAY it and adjust semi-fixed resistor L/RK35, R/RK36 to be 1 kHz level within ±0.5 dB.
3) Only check CrO_2 and METAL tapes/positions. In these case, to be 1 kHz level within ±1.0 dB.

7.8 REC/PLAY-BACK FREQUENCY RESPONSE CHECK DOLBY NR

1) Decrease –22 dB INPUT LEVEL from S.R.L setting. Record 1 kHz and 12.5 kHz signals at DOLBY B position. (NORMAL tape/position)
2) REWIND and PLAY it, and read difference level at 1 kHz and 12.5 kHz.
3) Do this same thing to CrO_2 and METAL tape/position.
4) Do same check at DOLBY C position.

Remarks:
1) Within specifications.

ADJUSTMENT POINT COMPONENT SIDE



8. SERVICE ROUTINE OF MICRO-PROCESSOR

Making Power ON while pressing Stop Key and REC MUTE Key results in Service Routine.

NOTE:
Key is not accepted until 4 seconds passed.

Service Routine has 4 modes as follows.

1. Endless Play
   Press Play Key to make Play mode. At the end of a Tape it is turned back to it's head and is played again.
   This Process is repeated automatically.
   Pressing Stop Key releases this mode.
2. Quick Rec
   Press Rec Key to make Rec mode directly. If Rew Key is pressed during Rec mode of a Tape is returned to the starting point of recording and then it is played automatically.
   Pressing Stop Key releases this mode.
3. FL Check
   Press RESET Key to light all of FL. Under this state press D-MODE Key to turn off the light of each Segment one by one.
   Pressing Stop Key releases this mode.
4. Port Check
   When Memo Key is pressed the number of Port and active is indicated in the Character indication. When Reset Key is pressed under this state active in the Port inverts.
   Press FF or REW Key to choose the Port. Only output Port is indicated.
   Pressing Stop Key releases this mode.
   CAUTION:
   Disconnect the mechanical connector before performing this check.

Only above-mentioned Key can be accepted by Service Routine. Service Routine is effective until Power becomes OFF and μ-COM is reset.

MICRO-PROCESSOR

QU01 : MB88515B

Pin No.	Port Name		I/O	Act	Function
1	E0	A	O	H	Segment output
2	E1	B	O	H	
3	E2	C	O	H	
4	E3	D	O	H	
5	E4	E	O	H	
6	E5	F	O	H	
7	E6	G	O	H	
8	E7	H	O	H	
9	E8	I	O	H	
10	E9	J	O	H	
11	E10	K	O	H	
12	E11	L	O	H	
13	E12	1G	O	H	Grid output
14	E13	2G	O	H	
15	E14	3G	O	H	
16	E15	4G	O	H	
17	E16	5G	O	H	
18	E17	6G	O	H	
19	E18	Source	O	H	Source on
20	E19	Tape	O	H	Tape on
21	E20	Normal	O	H	EQ select
22	E21	CrO_2	O	H	EQ select
23	E22	Metal	O	H	EQ select
24	E23	Line mute	O	H	Line mute
25	EX	X'tal in	I	–	Clock in
26	X	X'tal out	O	–	Clock out
27	Reset	Reset	I	L	Reset in
28	SO (E24)	–	–	–	
29	SI (E25)	Remote	I	L	RC-5 in
30	SC/TO (E26)	_	–	–	–
31	IRQ (E27)	Power down	I	L	Power off
32	Vss	Vss	–	–	GND

Pin No.	Port Name		I/O	Act	Function
33	R0	Rec mute	O	H	Rec mute
34	R1	Bias Osc cont	O	L	Osc on/off
35	R2	Rec/Play	O	L	R/P mode
36	R3	RM+	O	H	R-M Drive
37	R4	RM–	O	H	R-M Drive
38	R5	RPC	O	H	R-M Torque
39	R6	SOL	O	L	SOL Drive
40	R7	CPM	O	H	C-M Drive
41	Start (E37)	–	–	–	–
42	TC (E36)	Metal detect	I	L	Mecha sens
43	AVss	AVss	–	–	AD GND
44	AVr–	AVr–	I	–	AD Ref. Vss
45	AVr+	AVr+	I	–	AD Ref. Vcc
46	AVcc	AVcc	–	–	AD Vcc
47	AN7 (E35)	Key in A	I	–	Key matrix
48	AN6 (E34)	Key in B	I	–	Key matrix
49	AN5 (E33)	Meter Rch	I	–	Meter Rch
50	AN4 (E32)	Meter Lch	I	–	Meter Lch
51	AN3	QMS on/off	I	–	QMS on/off
52	AN2	Normal Linear	I	–	Count mode
53	AN1	1 Way Reverse	I	–	Mecha mode
54	AN0	Reverse mode	I	–	Rever mode
55	R8	Quick Reverse	I	L	Reverse Det
56	R9	Reel-B	I	–	Reel pulse
57	R10	Reel-A	I	–	Reel pulse
58	R11	Tape in detc	I	L	Mecha sens
59	R12	–	–	–	–
60	R13	CrO_2 detect	I	L	Mecha sens
61	R14	Anti Rec (F)	I	L	Mecha sens
62	R15	Anti Rec (R)	I	L	Mecha sens
63	N.C	–	–	–	–
64	Vcc	Vcc	–	–	–

9. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R*** : (1) GD05 x x x 140, Carbon film fixed resistor, ± 5 % 1/4W
R*** : (2) GD05 x x x 160, Carbon film fixed resistor, ± 5 % 1/6W

① —— Resistance value

Examples ;

① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C*** : CERAMIC CAP.
(1) DD1x x x x 370, Ceramic capacitor
Disc type
Temp.coeff.P350~N1000,50V

① Tolerance
② Capacity value

Examples

①Tolerance (Capacity deviation)
± 0.25pF ... 0
± 0.5pF ... 1
± 5 % ... 5

* Tolerance of COMMON PARTS handled here are as follows :
0.5pF~ 5pF...± 0.25pF
6pF~ 10pF...± 0.5pF
12pF~ 560pF...± 5 %

②Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C*** : CERAMIC CAP.
(1) DK16 x x x 300, High dielectric constant ceramic capacitor
Disc type
Temp.chara. 2B4, 50V

① Capacity value

Examples

②Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C*** : ELECTROLY CAP.(⏚), FILM CAP.(⏚)
(1) EA x x x x x x 10, Electrolytic capacitor
One-way lead type, Tolerance ± 20 %

① Working voltage
② Capacity value

Examples

①Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...118
		2200μF...228

②Working voltage

6.3V...006	25V...025
10V...010	35V...035
16V...016	50V...050

(2) DF15 x x x 350, Plastic film capacitor
One-way type, Mylar ± 5 % 50V

① Capacity value

Examples

①Capacity value

0.001μF(1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

NOTE : The above CODES (R***,R***,C***,C*** and C***) are omitted on the schematic diagram in some case.
On the occasion, be confirmed the common parts on the parts list.

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION				PART NO.
			PJ03-AUDIO / SUPPLY CIRCUIT BOARD				
PJ03			AUDIO / SUPPLY PCB				WA453T1010
			PJ03-CAPACITORS				
CG01		4822 124 22274	Elect	4.7μF		50V	OA47505020
CG02		4822 124 22274	Elect	4.7μF		50V	OA47505020
CG03		4822 124 41539	Elect	47μF		16V	OA47601620
CG04		4822 124 41539	Elect	47μF		16V	OA47601620
CJ01		4822 124 22274	Elect	4.7μF		50V	OA47505020
CJ02		4822 124 22274	Elect	4.7μF		50V	OA47505020
CJ03		4822 126 11722	Ceramic	680pF	±10%	50V	DA16681110
CJ04		4822 126 11722	Ceramic	680pF	±10%	50V	DA16681110
CJ05		4822 124 90354	Elect	100μF		16V	OA10701620
CJ06		4822 124 90354	Elect	100μF		16V	OA10701620
CJ11		4822 122 31211	Ceramic	100pF	±10%	50V	DK16101550
CJ12		4822 122 31211	Ceramic	100pF	±10%	50V	DK16101550
CK01 ~ CK04		4822 124 22274	Elect	4.7μF		50V	OA47505020
CK07		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK08		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK11		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK12		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK15		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK16		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK17		4822 124 41539	Elect	47μF		16V	OA47601620
CK18		4822 124 41539	Elect	47μF		16V	OA47601620
CK19		4822 126 11557	Ceramic	4.7pF	±10%	50V	DA16047120
CK20		4822 126 11557	Ceramic	4.7pF	±10%	50V	DA16047120
CK21		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK22		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CK25		4822 124 22274	Elect	4.7μF		50V	OA47505020
CK26		4822 124 22274	Elect	4.7μF		50V	OA47505020
CK27		4822 126 11071	Ceramic	330pF	±10%	50V	DA16331111
CK28		4822 126 11071	Ceramic	330pF	±10%	50V	DA16331111
CK29		4822 122 31211	Ceramic	100pF	±10%	50V	DK16101550
CK30		4822 122 31211	Ceramic	100pF	±10%	50V	DK16101550
CL03		4822 124 41539	Elect	47μF		16V	OA47601620
CL04		4822 121 43774	Film	0.012μF	±10%	250V	DF76123530
CM01 ~ CM07		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
CR01		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
CS01		4822 124 22274	Elect	4.7μF		50V	OA47505020
CU01		4822 124 90354	Elect	100μF		16V	OA10701620
CU02		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
CU03		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
CU04		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
CW01		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
CW03		4822 126 10408	Ceramic	220pF	±10%	50V	DA16221110
CW04		4822 126 10408	Ceramic	220pF	±10%	50V	DA16221110
CW05		4822 124 22274	Elect	4.7μF		50V	OA47505020
CW06		4822 124 22274	Elect	4.7μF		50V	OA47505020
CW21		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CW22		4822 122 33639	Ceramic	1000pF	±10%	50V	DA16102110
CW23		4822 124 22274	Elect	4.7μF		50V	OA47505020
CW24		4822 124 22274	Elect	4.7μF		50V	OA47505020
CX01		4822 124 41543	Elect	1μF		50V	OA10505020
CX02		4822 124 41543	Elect	1μF		50V	OA10505020
CX03		4822 124 90354	Elect	100μF		16V	OA10701620
C605		4822 124 23445	Elect	0.56μF		50V	EA56405010
C606		4822 124 23445	Elect	0.56μF		50V	EA56405010
C609		4822 124 90354	Elect	100μF		16V	OA10701620
C610		4822 124 22274	Elect	4.7μF		50V	OA47505020
C611		4822 124 90354	Elect	100μF		16V	OA10701620
C613 ~ C616		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION				PART NO.
C804		4822 124 41538	Elect	220μF		35V	OA22703520
C806		4822 124 41539	Elect	47μF		16V	OA47601620
C822		4822 124 90354	Elect	100μF		16V	OA10701620
C823		4822 124 23445	Elect	0.56μF		50V	EA56405010
C824		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
C831	/02B/02G /05B	4822 124 22572	Elect	100μF		63V	OA10706320
	/01B/01G	4822 124 80771	Elect	100μF		100V	OA10710020
C832	/02B/02G /05B	4822 124 22572	Elect	100μF		63V	OA10706320
	/01B/01G	4822 124 80771	Elect	100μF		100V	OA10710020
C833		4822 124 22274	Elect	4.7μF		50V	OA47505020
C834		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
C835		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
C851		4822 124 41538	Elect	220μF		35V	OA22703520
C852		4822 124 22274	Elect	4.7μF		50V	OA47505020
C853		4822 124 22274	Elect	4.7μF		50V	OA47505020
C903		4822 126 10409	Ceramic	560pF	±10%	50V	DA16561110
C904		4822 126 10409	Ceramic	560pF	±10%	50V	DA16561110
C907		4822 122 31211	Ceramic	100pF	±10%	500V	DK16101550
C908		4822 122 31211	Ceramic	100pF	±10%	500V	DK16101550
C911		4822 121 43775	Film	560pF	±10%	250V	DF76561530
C912		4822 121 43775	Film	560pF	±10%	250V	DF76561530
C913		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
C914		4822 122 40588	Ceramic	0.022μF	±20%	25V	DA17223110
C915		4822 124 41539	Elect	47μF		16V	OA47601620
C916		4822 126 11557	Ceramic	4.7pF	±10%	50V	DA16047120
			PJ03-CAPACITORS (COMMON)				
$\overline{C***}$			Electrolytic capacitor, ±20% : C607, C608, C612, C803, C805, C821				
$\overline{C***}$			Plastic film capacitor, ±5% 50V : CJ07, CJ08, CK23, CK24, C905, C906, C909, C910				
$\overline{C***}$			Plastic film capacitor, ±10% 50V : CK05, CK06, CK09, CK10, CK13, CK14, CL01, CL02, C601~C604, C901, C902				
			PJ03-RESISTORS				
RJ15		4822 100 11373	4.7K Ω, Trimming				RA04720780
RJ16		4822 100 11373	4.7K Ω, Trimming				RA04720780
RL02		4822 050 23308	3.3 Ω	±5%	1/4W		GG05033140
⚠RL04		4822 113 90119	22 Ω	±2%	1/4W, Fusible		NF02220140
RV01		4822 100 12109	100K Ω (A) x 2, Variable Rec				RM01041530
RV02		4822 100 12107	250K Ω (W), Variable Balance				RK02540190
RV03		4822 100 12108	5K Ω (B), Variable Bias Fine				RK05020410
⚠RX17		4822 115 90166	10 Ω	±2%	1/4W, Fusible		NF02100140
R621		4822 050 21022	1K Ω	±5%	1/2W		GG05102120
⚠R801	/02B/02G /05B	4822 113 90107	4.7 Ω	±5%	1/4W, Fusible		NH05047140
⚠R821	/02B/02G /05B	4822 116 60307	1 Ω	±5%	1/4W, Fusible		NH05010140
⚠R831		4822 113 90119	22 Ω	±2%	1/4W, Fusible		NF02220140
R832		4822 050 26802	6.8K Ω	±5%	1/2W		GG05682120
⚠R851		4822 116 60314	1 Ω	±5%	1/4W, Fusible		NH05100140
R901		4822 100 20681	2.2K Ω, Trimming				RA02220780
R902		4822 100 20681	2.2K Ω, Trimming				RA02220780
GU01 ~ GU04		4822 111 91204	47K Ω x 6, Array				BW05473040

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION		PART NO.
			PJ03-RESISTORS (COMMON)		
R***			Carbon film fixed resistor, ±5% 1/6W : RG01~RG08, RJ01~RJ14, RJ17, RJ18, RJ19, RK01~RK34, RL01, RL03, RL05, RM01, RM03~RM07, RR01, RR02, RR04, RR11, RS01, RU03~RU08, RU11, RU12, RW01, RW02, RW21~RW24, RX01~RX16, R601~R618, R802~R806, R808, R809, R822, R823, R852~R858, R903~R908, R910~R913		
			PJ03-SEMICONDUCTORS		
DJ01		4822 130 33305	Diode	1SS176, etc.	HD20002000
DM01		4822 130 80839	Diode	S5688G	HD20029050
DM02		4822 130 80316	Zener	MTZJ3.6A	HD30361000
DM03		4822 130 80316	Zener	MTZJ3.6A	HD30361000
DM04		4822 130 33305	Diode	1SS176, etc.	HD20002000
DR02		4822 130 33305	Diode	1SS176, etc.	HD20002000
DR03		4822 130 33305	Diode	1SS176, etc.	HD20002000
DU01 ~ DU04		4822 130 33305	Diode	1SS176, etc.	HD20002000
DU07		4822 130 33305	Diode	1SS176, etc.	HD20002000
DU08		4822 130 33305	Diode	1SS176, etc.	HD20002000
DU09		4822 130 33948	Zener	RD5.6JB2 / MTZJ5.6B	HD30561000
DX01 ~ DX07		4822 130 33305	Diode	1SS176, etc.	HD20002000
D601 ~ D608		4822 130 33305	Diode	1SS176, etc.	HD20002000
⚠D801 ~ ⚠D804		4822 130 80839	Diode	S5688G	HD20029050
D805		4822 130 33948	Zener	RD5.6JB2 / MTZJ5.6B	HD30561000
⚠D821 ~ ⚠D825		4822 130 80839	Diode	S5688G	HD20029050
⚠D831		4822 130 80839	Diode	S5688G	HD20029050
⚠D832		4822 130 80839	Diode	S5688G	HD20029050
D833		4822 130 33305	Diode	1SS176, etc.	HD20002000
D834		4822 130 81659	Zener	RD27JB2	HD32701000
D835		4822 130 80272	Zener	RD7.5JB2 / MTZJ7.5C	HD30751000
⚠D836		4822 130 80839	Diode	S5688G	HD20029050
D851		4822 130 33305	Diode	1SS176, etc.	HD20002000
D852		4822 130 33948	Zener	RD5.6JB2 / MTZJ5.6B	HD30561000
D853		4822 130 33305	Diode	1SS176, etc.	HD20002000
D901 ~ D904		4822 130 33305	Diode	1SS176, etc.	HD20002000
QG01		4822 209 61187	IC	BA15218	HC10089210
QJ01		4822 130 61187	Transistor, Digital	DTA144TS	BA10009210
QJ02		4822 130 61187	Transistor, Digital	DTA144TS	BA10009210
QJ03		4822 209 61187	IC	BA15218	HC10089210
QK01		4822 130 42298	Transistor	2SC536SP, etc.	HT30001000
QK02		4822 130 42298	Transistor	2SC536SP, etc.	HT30001000
QK03 ~ QK08		4822 130 61189	Transistor, Digital	DTC114TS	BA20017210
QK09		4822 209 61187	IC	BA15218	HC10089210
QL01		4822 130 61886	Transistor	2SD1292 (O, R)	HT412922A0
QL02		4822 130 61886	Transistor	2SD1292 (O, R)	HT412922A0
QL03		4822 130 42715	Transistor	2SA608SP, etc.	HT10001000
QL04		4822 130 61189	Transistor, Digital	DTC114TS	BA20017210
QL05		4822 130 60766	Transistor, Digital	DTA114ES / UN4211	BA10001000

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
QM01		4822 130 61886	Transistor 2SD1292 (O, R)	HT412922A0
QM02		4822 130 61886	Transistor 2SD1292 (O, R)	HT412922A0
QM03		4822 130 60766	Transistor, Digital DTA114ES	BA10001000
QM04		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
QM05		4822 209 30193	IC LB1641	HC10279030
QM06		4822 130 60588	Transistor, Digital DTC114ES	BA20001000
QR01		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
QS01		4822 209 61667	IC μPC1330HA	HC10206060
QS02		4822 130 61188	Transistor, Digital DTC144TS	BA20016210
QS03		4822 209 83794	IC LB1292	HC10131030
QU01		4822 209 32896	Microprocessor MB88515B	HU453TF000
QU02		4822 130 60766	Transistor, Digital DTA114ES	BA10001000
QW21		4822 130 61723	Transistor, Digital DTC323TS	BA20028210
QW22		4822 130 61723	Transistor, Digital DTC323TS	BA20028210
QX01		4822 209 61187	IC BA15218	HC10089210
Q601		4822 209 62251	IC CXA1331S	HC10023250
Q602		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
Q603		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
Q604		4822 130 61886	Transistor 2SD1292 (Q, R)	HT412922A0
⚠Q801		4822 209 62548	Transistor 2SB1185 (E, F)	HT211852B0
Q802		4822 209 32895	IC BA10358	HC10164210
Q803		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
⚠Q821		4822 209 61847	IC NJM78M05FA	HC38505090
Q822		4822 130 61227	Transistor, Digital DTA114ES	BA10007210
Q823		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
Q831		4822 130 62334	Transistor 2SB1353 (E)	HT213531E0
Q851		4822 130 42298	Transistor 2SC536SP, etc.	HT30001000
Q852		4822 130 42682	Transistor, Digital DTA144ES	BA10002000
Q853		4822 130 61188	Transistor, Digital DTC144TS	BA20016210
Q854		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
Q855		4822 130 61189	Transistor, Digital DTC114TS	BA20017210
Q856		4822 130 42715	Transistor, Digital 2SA608SP, etc.	HT10001000
Q901		4822 209 72874	IC μPC1297CA	HC10200060
Q902		4822 130 42298	Transistor 2SC536SP, etc.	HT30001000
			PJ03-MISCELLANEOUS	
⚠F801	/01B/01G	4822 070 38001	Fuse 800 mA 250V	FS10080850
⚠F821	/01B/01G	4822 070 31252	Fuse 1.25 A 250V	FS10125850
JG01	/01B/02B /05B	4822 267 31722	Jack, Headphone	YJ01003780
	/01G/02G	4822 267 31726	Jack, Headphone	YJ01003790
JR01		4822 267 41009	Terminal, 2P RCA	YT02020890
JW01		4822 157 63605	Terminal, 4P RCA	YT02040940
⚠J091	/01B/01G	4822 277 21465	Slide Switch, Voltage Selector	SS0202124R
LJ01		4822 157 53521	Choke Coil 22 mH	LC22260710
LJ02		4822 157 53521	Choke Coil 22 mH	LC22260710
LL01		4822 148 81074	OSC Transformer, Bias 105 KHz	TC10140350
LK01		4822 157 53521	Choke Coil 22 mH	LC22260710
LK02		4822 157 53521	Choke Coil 22 mH	LC22260710
LK05		4822 157 53521	Choke Coil 22 mH	LC22260710
LK06		4822 157 53521	Choke Coil 22 mH	LC22260710
L601		4822 157 63828	M.P.X. Coil 19 KHz	LS10415020
L602		4822 157 63828	M.P.X. Coil 19 KHz	LS10415020
⚠L801	/01B/01G	4822 146 21768	Power Transformer	TS15425060
	/02B/02G /05B	4822 146 21769	Power Transformer	TS15425050
L901		4822 157 63829	OSC Transformer, HX-PRO 105 KHz	TC10110030
L902		4822 157 63829	OSC Transformer, HX-PRO 105 KHz	TC10110030
SS01		4822 273 10278	Rotary Switch, Dolby	SR01050040
XU01		4822 242 72596	Ceramic Resonutor, CST-6.000MGW-TF01	FQ06004020

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
			PU03-FRONT CIRCUIT BOARD	
PU03			FRONT PCB	WA453T2010
			PU03-RESISTORS (COMMON)	
R***			Carbon film fixed resistor, ±5% 1/6W RU21~RU28, RU31~RU37	
			PU03-SEMICONDUCTORS	
DU07		4822 130 33305	Diode 1SS176, etc.	HD20002000
DU08		4822 130 33305	Diode 1SS176, etc.	HD20002000
			PU03-MISCELLANEOUS	
SS02		4822 277 30867	Slide Switch, Timer	SS02030370
~				
SU21		4822 276 20508	Push Switch, Tact	SP01011280
SU26				
SU32		4822 276 20508	Push Switch, Tact	SP01011280
SU34		4822 276 20508	Push Switch, Tact	SP01011280
SU35		4822 276 20508	Push Switch, Tact	SP01011280
SU36		4822 276 20508	Push Switch, Tact	SP01011280
VU01		4822 130 91296	Display Unit FIP52BW13Y	HQ30409060
			PU63-POWER SW CIRCUIT BOARD	
PU63			POWER SW PCB	WA453T1020
C802		4822 122 40588	Ceramic Cap. 0.022μF ±20% 25V	DA17223110
⚠S801		4822 276 13463	Push Switch, Power	SP02012080

NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type),may increase risk of fire or electrical shock hazard.